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ABSTRACT

Included in this bibliography are over 3,200 references to publications on Halley's Comet, its history, orbital motion, and physical characteristics, meteor streams associated with it, preparations for space missions to study it in 1986, and popular reaction to its appearances. Also cited are a few papers that, although they devote little attention to Halley's Comet as such, are of importance to the present state of knowledge about comets in general. Most of the entries describe books, parts of books, pamphlets, reports, and articles in journals, selected newspapers, conference proceedings, encyclopedias, and other collections. In addition to scientific observations and studies, there are references to early broadsides and news sheets, works of judicial astrology, comet catalogs, personal recollections, letters, fiction, drama, verse, humorous sketches, music, celestial charts, orbit diagrams and models, photographs, drawings, cartoons, and paintings. Most of these entries refer to publications in European languages, but a few items in Oriental languages are represented. Twenty illustrations, an historical introduction, a list of bibliographic sources, many annotations, and name and topical indexes are included. (Addenda and errata to the original work are also included.) (JN)

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A Bibliography

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PREFACE

Scope: subject. Included in the bibliography are references to publications on Halley's Comet, its history, orbital motion, and physical characteristics, meteor streams associated with it, preparations for space missions to study it in 1986, and popular reaction to its appearances. Also cited are a few papers that, although they devote little attention to Halley's Comet as such, are of importance to the present state of our knowledge about comets in general.

Scope: kinds and forms of publications. Most of the entries describe books, parts of books, pamphlets, and reports, and articles in journals, selected newspapers, conference proceedings, encyclopedias, and other collections. In addition to scientific observations and studies, there are references to early broadsides and news sheets, works of judicial astrology, comet catalogs, personal recollections, letters, fiction, drama, verse, humorous sketches, music, celestial charts, orbit diagrams and models, photographs, drawings, cartoons, and paintings. With the exception of a few pieces of unpublished music, manuscripts are excluded.

Scope: languages. Linguistic coverage reflects not only the compiler's limitations but also the strengths and weaknesses of the collections of the Library of Congress. Most of the entries refer to publications in European languages, but a few items in oriental languages are represented.

Scope: quality. The compiler has not ruled out what even the most charitable judgment might dismiss as nonsense, since some of the more peculiar ideas about comets in general and Halley's Comet in particular are of historical or cultural interest. Wherever possible, similar items were compared so that references to the same work or extracts from it published in different sources could be combined into a single entry. Although, not surprisingly, many general articles and essays by different writers cover the same ground, none was excluded for this reason. Their existence testifies to the widespread interest in this famous object, and their number increases the likelihood that some will be available in every library.

Bibliographic style. The style followed is roughly that recommended in *Bibliographical Procedures & Style* (Washington, Library of Congress, 1954), by Blanche P. McCrum and Helen D. Jones, with modifications adapted from the first *Anglo-American Cataloging Rules* (Chicago, American Library Association [1970]).

Arrangement. Citations are arranged alphabetically by main entry, whether author or title, according to the *Filing Rules for the Dictionary Catalogs of the Library of Congress* (Washington, Processing Dept., 1956). Cross references connect closely related entries, and a topical index provides access by subject.

Transliteration. For works in languages that do not use the Roman alphabet, transliterations have been made in accordance with the various schemes adopted by the Library of Congress. Transliteration has been provided for Greek only in the case of a few articles entirely in that language. Where Greek words or letters occur in a Roman-alphabet title or annotation, they have been set in the Greek alphabet.

Call numbers, location symbols, and shelfmarks. Library of Congress call numbers are given for all cataloged publications. During the course of this compilation, some materials formerly on the shelves in the general collections have been removed to the custody of the Rare Book and Special Collections Division, or transferred to microfilm; not all of these changes could be incorporated into the many entries that had been completed before the shifts took place. Cardboard dummies bearing information about the current location of these volumes are shelved in the general collections under the old call numbers. Uncataloged items and materials in custodial collections are marked with appropriate designations; these, and the National Union Catalog symbols used to show the location of monographs and a few selected serials in other U.S. libraries, are identified in the list of library location symbols (p. xxiii). With few exceptions, locations for serials not held by the Library of Congress are given only for the U.S. Naval Observatory Library; for the whereabouts of others, standard union lists and catalogs should be consulted. In the case of monographic materials that could not be located in North American libraries, appropriate shelfmarks are given for any found in the published catalogs or collections of the British Library, the Bibliothèque Nationale in Paris, and the Royal Observatory Edinburgh. A few locations derived from other published catalogs and bibliographies are supplied for items not available elsewhere; in such cases, the source of the ascription is usually identified. For technical reports not found in the classified collections of the Library of Congress, accession numbers assigned by the National Aeronautics and Space Administration (NASA) or the American Institute of Aeronautics & Astronautics (AIAA) are given. These numbers are needed to retrieve microfiche copies held by the Science and Technology Division; in the case of items not available in the Library of Congress, the numbers will make it easier to locate copies elsewhere and to find additional information in *Scientific and Technical Aerospace Reports* and *International Aerospace Abstracts*.

Although a considerable effort was made to locate copies of cited materials, references from trustworthy sources such as national bibliographies and long-established bibliographic services were included even if copies could not be found by searching available library catalogs. Many of the unlocated items are pamphlets and other ephemera, chiefly from 1910; even if copies no longer survive, their original appearance is indicative of popular concern at the time, sufficient to justify their inclusion.

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INTRODUCTION

By the time Halley's Comet swings past the sun in early 1986 and heads back into the dim and distant outer reaches of its orbit, everybody on earth may well be tired of hearing about it. Nevertheless, despite the fanfare and ballyhoo that will undoubtedly pervade the news and advertising media for months to come, this rather modest object may be expected to retain its unique hold on the human imagination, and for a very simple reason—the interval between its returns to the earth's neighborhood approximates the human life span. Everyone knows somebody who saw it in 1910, and those who were young children at the time and had it pointed out to them by parents have fostered the hope of living to see it again. Loren Eiseley's account best describes this experience:

> Like hundreds of other little boys of the new century, I was held up in my father's arms under the cottonwoods of a cold and leafless spring to see the hurtling emissary of the void. My father told me something then that is one of my earliest and most cherished memories.
>
> "If you live to be an old man," he said carefully, fixing my eyes on the midnight spectacle, "you will see it again. It will come back in seventy-five years. Remember," he whispered in my ear, "I will be gone, but you will see it. All that time it will be traveling in the dark, but somewhere, far out there"—he swept a hand toward the blue horizon of the plains—"it will turn back. It is running glittering through millions of miles."
>
> I tightened my hold on my father's neck and stared uncomprehendingly at the heavens. Once more he spoke against my ear and for us two alone. "Remember, all you have to do is be careful and wait. You will be seventy-eight or seventy-nine years old. I think you will live to see it—for me," he whispered a little sadly with the foreknowledge that was part of his nature.
>
> "Yes, Papa," I said dutifully, having little or no grasp of seventy-five years or millions of miles on the floorless pathways of space. Nevertheless I was destined to recall the incident all my life. It was out of love for a sad man who clung to me as I to him that, young though I was, I remembered. There are long years still to pass, and already I am breathing like a tired runner, but the voice still sounds in my ears and I know with the sureness of maturity that the

great wild satellite has reversed its course and is speeding on its homeward journey toward the sun.[1]

But aside from its "once-in-a-lifetime" appeal, Halley's Comet deserves to be remembered, for it has a special place in the history of science. As those who have studied the scientific method are aware, the ultimate test of a hypothesis is its predictive capability. The physical laws embodied in Newton's *Principia* (written at Halley's urging and published in 1687 with his financial support) had not been completely accepted even by those who could understand them; alternative ideas, chief among them Descartes' vortical theory,[2] were still preferred by some philosophers. The fulfillment of Halley's prediction in 1758 was the first triumph of Newton's theory of universal gravitation. It was recognized as such at the time, particularly by the French, whose remarkable advances in the development of mathematics had enabled them to produce a more precise calculation of the comet's return shortly before it reappeared. The astronomer Lalande proclaimed, in the 1759 *Mémoires* of the Académie royale des sciences, "L'univers voit cette année le phénomène le plus satisfaisant que l'Astronomie nous ait jamais offert; évènement unique jusqu'à ce jour, il change nos doutes en certitude, & nos hypothèses en des démonstrations."[3]

Although the excitement was more subdued in England, an anonymous contributor to the *Gentleman's Magazine* of May 1759 wrote, "The appearance of the expected comet, now turns the attention of men very much this way; and it is with the highest pleasure that I congratulate the astronomers on an event so agreeable as this is, and so glorious to the memory of Dr *Halley*. 'Tis well known to those who are conversant in these things, that the present period of this comet has been longer by a year and a half than its preceeding one, and that one cause of this has been the influence of *Jupiter* upon it in its last descent to the sun. Dr *Halley* foresaw this, and therefore, with great sagacity, fixed its return to the very time in which it has happened; and he will, I suppose, be for ever remembered and admired as the first person who has foretold an event of this kind." Indeed, within 10 years, following a suggestion advanced by the abbé de La Caille in May 1759, the comet was beginning to be referred to as Halley's Comet;[4] by 1835, the term was in general use; and by 1910, Halley's other brilliant achievements in many fields of knowledge had been all but forgotten.

Since 1910, scientists have added greatly to the sum of what is known concerning comets, but much remains to be learned. Because it is the only short-period comet that displays the full range of cometary phenomena, and because its period is so well known that preparations can be made far in advance, Halley's Comet will be the object of intense scrutiny during its forthcoming return. The European Space Agency,[5] Japan,[6] and the Soviet Union[7] are sending spacecraft to study it; data will be collected by the Astro–1 payload aboard the space shuttle, as well as by the International Cometary Explorer and the Pioneer Venus Orbiter;[8] and the International Halley Watch is organizing ground-based professional and amateur observers around the globe to undertake a variety of studies.[9] These will be in such fields as astrometry, infrared spectroscopy and radiometry, large-scale phenomena, near-nucleus studies, photometry and polarimetry, radio science, and spectroscopy and spectrophotometry. The scientific objectives of all these investigations have been summarized as follows:

(1) to characterize the structure, basic physical processes, and chemical nature of cometary nuclei, and to determine the changes that occur as a function of time and orbital position;

(2) to characterize the basic properties of the cometary atmosphere and ionosphere and their development with time and orbital position, including production, structure, extent, and changing chemical composition; and

(3) to determine the nature of comet tails and the processes by which they are formed, and to characterize the interactions of comets with the solar wind.[10]

As comets are presently thought to be remnants of the material that originally formed the sun and its planets five billion years ago, information on their structure and content is expected to shed light on the origin of the solar system, a subject of much speculation but about which little is known.

Thus we see that Bailly's remark, made two centuries ago, still applies: "Cette petite comete, qui parut peu de tems & sans bruit, est venue nous instruire . . ."[11]

In 1695, 13 years after he had observed the comet that would bring him immortality, Edmond Halley began his study of cometary orbits, using the mathematical laws expounded in the *Principia*. After much laborious calculation, he began to surmise that the comet of 1682 was the same as those which had been seen in 1531 and 1607. Eventually, in 1705, he published his prediction that the comet would return in 1758;[12] some years later he refined this to "about the end of the year 1758, or the beginning of the next."[13] Johann Georg Palitzsch, a German amateur scientist living near Dresden, was the first to find it, on Christmas night in 1758;[14] Charles Messier, the most famous of comet seekers, was the victim of bad weather in Paris and saw it only on January 21, 1759.[15]

Once the comet's periodicity had been established in this way, the search began for records of earlier returns. Its appearance in 1456, suspected by Halley, was confirmed by Pingré,[16] and during the 19th century further identifications were made by Burckhardt,[17] Laugier,[18] and Hind.[19] Cowell and Crommelin investigated the comet's orbit carefully in the years preceding its 1910 return and made fresh progress in determining dates of its past appearances.[20] Recently, Yeomans and Kiang computed the comet's orbital motion back to 1404 B.C.[21] According to Yeomans, records have been found for every return of the comet from 240 B.C. on, with the single exception of the 164 B.C. apparition.[22] A table of perihelion dates is given on p. xxvii. It provides a convenient way of determining the periods during which Halley's Comet has been visible, and of identifying this comet in any further ancient records that may be discovered.

Beginning with its first predicted return in 1759, the comet has been subjected to an increasing amount of scientific study and popular attention. A literature of surprising extent and variety has resulted. The present bibliography had its origin in the summer of 1976, when in the course of answering a reference inquiry about the comet's orbit in 1910, I became aware that there was no thoroughgoing compilation available on the topic. Entries were collected in the usual way, beginning with the subject cards in the Main Catalog of the Library of Congress, continuing with an examination of general and specialized bibliographies, library catalogs, and indexes of periodicals, reports, and proceedings, listings in handbooks and encyclopedias, sources on 16th- and 17th-century broadsides and news sheets, national bibliographies, and copyright records, and supplementing these by browsing at the shelves and scanning periodicals not covered by indexing services. A list of some of the most useful sources appears on p. xv–xxii. Although a large number of citations were accumulated, I could not in good conscience call the end result "comprehensive," being too well aware of the quantity of published material for which my information was unacceptably incomplete.

The bibliographer who takes up this task after the 1985–86 apparition may have an easier time, despite the large volume of material that will have to be dealt with, because of the numerous indexing services now in existence, many of them backed by machine-readable data bases. Further, the International Halley Watch has announced its intention of publishing an archive of all Halley observations taken during the 1985–86 return; consideration is being given to including in the archive an index to published papers. It is nevertheless likely that the compiler's ingenuity and resourcefulness will be exercised to full capacity, and that the work will prove to be as instructive and enjoyable as I have found it.

Ruth S. Freitag

Notes

1. Item 845 in the bibliography.
2. For a brief exposition of the vortical theory, see Colin A. Ronan's biography, *Edmond Halley, Genius in Eclipse*, p. 19–21 (Garden City, N.Y., Doubleday, 1969).
3. Item 1771.
4. Items 1759 and 384.
5. Item 1941.
6. Item 714.
7. Item 53.
8. Items 825, 3191, and 3213.
9. Item 1533.
10. Ibid.
11. Jean Sylvain Bailly, *Histoire de l'astronomie moderne depuis la fondation de l'école d'Alexandrie, jusqu'à l'époque de M. D. C. XXX.*, nouv. éd., t. 2, p. 448 (A Paris, Chez De Bure, 1785).
12. Item 1185.
13. Item 1186.
14. Items 74 and 999.
15. Item 2836.
16. Item 2377.
17. Item 382.
18. Items 1800–1801.
19. Item 1410.
20. Items 640–644.
21. Item 3144.
22. Item 3139.

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LIBRARY LOCATION SYMBOLS

Library of Congress

DLC	Uncataloged materials
Micro	Microform Reading Room
Mus	Music Division
N&CPR	Newspaper and Current Periodical Room
Orien	Asian Division
Rare Bk. Coll.	Rare Book and Special Collections Division
Sci RR	Science Reading Room (technical reports)

Other Libraries

CBPac	Pacific School of Religion, Berkeley, Calif.
CCSC	School of Theology at Claremont, Claremont, Calif.
CLU-C	University of California at Los Angeles, William Andrews Clark Memorial Library, Los Angeles
CSdS	San Diego State University, San Diego, Calif.
CSt	Stanford University, Stanford, Calif.
CU	University of California, Berkeley
CtY	Yale University, New Haven, Conn.
DAS	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Library and Information Services Division, Rockville, Md.
DFo	Folger Shakespeare Library, Washington, D.C.
DN-Ob	U.S. Department of the Navy, Naval Observatory, Washington, D.C.

DNAL	U.S. National Agricultural Library, Beltsville, Md.
DNLM	U.S. National Library of Medicine, Bethesda, Md.
DSI	Smithsonian Institution, Washington, D.C.
DWP	Public Library of the District of Columbia, Washington, D.C.
GEU-T	Emory University, Candler School of Theology, Atlanta, Ga.
ICJ	John Crerar Library, Chicago, Ill.
ICMcC	McCormick Theological Seminary, Chicago, Ill.
ICRL	Center for Research Libraries, Chicago, Ill,
ICU	University of Chicago, Chicago, Ill.
ICU-Y	University of Chicago, Yerkes Observatory, Williams Bay, Wis.
IEN	Northwestern University, Evanston, Ill.
IU	University of Illinois, Urbana
IaU	University of Iowa, Iowa City
IdU	University of Idaho, Moscow
InU	Indiana University, Bloomington
MA	Amherst College, Amherst, Mass.
MB	Boston Public Library, Boston, Mass.
MBAt	Boston Athenaeum, Boston, Mass.
MBU-T	Boston University, School of Theology, Boston, Mass.
MH	Harvard University, Cambridge, Mass.
MH-AH	Harvard University, Andover-Harvard Theological Library, Cambridge, Mass.
MWelC	Wellesley College, Wellesley, Mass.
MdAN	U.S. Naval Academy, Annapolis, Md.
MdBP	Enoch Pratt Free Library, George Peabody Branch, Baltimore, Md.
MiU	University of Michigan, Ann Arbor
N	New York State Library, Albany
NIC	Cornell University, Ithaca, N.Y.
NN	New York Public Library, New York, N.Y.
NNC	Columbia University, New York, N.Y.
NPV	Vassar College, Poughkeepsie, N.Y.
NWM	U.S. Military Academy, West Point, N.Y.
NjP	Princeton University, Princeton, N.J.
NjPT	Princeton Theological Seminary, Princeton, N.J.
OC	Public Library of Cincinnati and Hamilton County, Cincinnati, Ohio
OCU	University of Cincinnati, Cincinnati, Ohio
OCl	Cleveland Public Library, Cleveland, Ohio
ODW	Ohio Wesleyan University, Delaware
ODaStL	Saint Leonard College, Dayton, Ohio
OGK	Kenyon College, Gambier, Ohio

OO	Oberlin College, Oberlin, Ohio
OU	Ohio State University, Columbus
OkU	University of Oklahoma, Norman
PBa	Academy of the New Church, Bryn Athyn, Pa.
PHC	Haverford College, Haverford, Pa.
PP	Free Library of Philadelphia, Philadelphia, Pa.
PPAN	Academy of Natural Sciences of Philadelphia, Philadelphia, Pa.
PPAmP	American Philosophical Society, Philadelphia, Pa.
PPCP	College of Physicians of Philadelphia, Philadelphia, Pa.
PPG	German Society of Pennsylvania, Philadelphia
PPL	Library Company of Philadelphia, Philadelphia, Pa.
PPWe	Westminster Theological Seminary, Philadelphia, Pa.
PSC	Swarthmore College, Swarthmore, Pa.
PU	University of Pennsylvania, Philadelphia
RPB	Brown University, Providence, R.I.
RPJCB	John Carter Brown Library, Providence, R.I.
TxU	University of Texas, Austin
ViU	University of Virginia, Charlottesville
WU	University of Wisconsin, Madison
WaU	University of Washington, Seattle

COMPUTED PERIHELION DATES FOR HALLEY'S COMET

Halley's Comet may be visible to the naked eye for periods lasting from a few weeks to a month or more, before and/or after perihelion (the time of its nearest approach to the sun). The table gives calculated perihelion dates for the coming return and previous apparitions back to 1404 B.C. From 1582 on, Gregorian calendar dates are used; earlier dates are according to the Julian calendar.

1986 February 9
1910 April 20
1835 November 16
1759 March 13
1682 September 15
1607 October 27
1531 August 26
1456 June 9
1378 November 10
1301 October 25
1222 September 28
1145 April 18
1066 March 20
989 September 5
912 July 18
837 February 28
760 May 20
684 October 2
607 March 15
530 September 27
451 June 28
374 February 16
295 April 20
218 May 17
141 March 22
66 January 25
12 B.C. October 10
87 B.C. August 6
164 B.C. November 12
240 B.C. May 25
315 B.C. September 8
391 B.C. September 14
466 B.C. July 18
540 B.C. May 10
616 B.C. July 28
690 B.C. January 22
763 B.C. August 5
836 B.C. May 9
911 B.C. May 20
986 B.C. December 2
1059 B.C. December 3
1129 B.C. April 3
1198 B.C. May 11
1266 B.C. September 5
1334 B.C. August 25
1404 B.C. October 15

Adapted from *The Comet Halley Handbook*, by Donald K. Yeomans (item 3139), and "The Long-Term Motion of Comet Halley," by Yeomans and Tao Kiang (item 3144).

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HALLEY'S COMET

1
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A summary in English is presented in the *Monthly Notices* of the Royal Astronomical Society, v. 23, Jan. 1863, p. 116–118 (QB1.R7, v. 23).

2
Abell, E. W. Halley's Comet with a small telescope. Popular astronomy, v. 18, Apr. 1910: 243–244. QB1.P8, v. 18

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3
Abell, E. W. Meteors from Halley's Comet on May 6. Popular astronomy, v. 18, Aug./Sept. 1910: 422–424. QB1.P8, v. 18

4
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Observations made Apr. 20–June 28, 1910.

First published in *Astronomische Nachrichten*, Bd. 186, Nr. 4443, 4462, 1. Okt., 22. Dez. 1910, columns 35–38 and 359–362 (QB1.A77, v. 186).

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Observations made Dec. 4, 1909 – Mar. 4, 1910.

First published as "Cometa 1909 c (Halley)" in *Astronomische Nachrichten*, Bd. 185, Nr. 4418, 9. Juni 1910, columns 25–30 (QB1.A77, v. 185).

6

Académie des sciences, *Paris*. Sur la comete de 1682. *In its* Histoire de l'Académie royale des sciences. t. 1. Depuis son établissement en 1666 jusqu'à 1686. A Paris, Chez G. Martin, J.-B. Coignard, fils, H.-L. Guerin, Ruë S. Jacques, MDCCXXXIII. p. 350–351. Q46.A13, v. 1

Notes that the comet appeared, in the constellation of the Bear, following public rejoicings and fireworks at the birth of the Duke of Burgundy, just as the comet of 1607, observed and described by Kepler, had appeared in the same constellation during similar festivities in Prague.

7

Accolla, Giuseppe. Dispersione elettrica e potenziale dell'atmosfera in Tunisi durante il passaggio della cometa di Halley. Il Nuovo cimento, ser. 6, v. 1, febbr. 1911: 132–138. QC1.N9, s. 6, v. 1

Tables give details of observations made May 16, 19, and 22.

8

An Account of the remarkable comet, whose appearance is expected at the end of this present year 1757, or at the beginning of 1758: with the dreadful effects that may probably happen by its near approach to the earth's orbit. Likewise observations on the other two remarkable comets, which are expected to appear in the years 1789, 2255. The whole illustrated with reflections on the general conflagration. 3d ed. London, H. Dell, 1757. 32 p. CtY

A short extract appears in the *London Magazine; or, Gentleman's Monthly Intelligencer*, v. 26, May 1757, p. 211 (AP3.L7, v. 26 Rare Bk. Coll.).

A notice in the *Monthly Review*, v. 17, Aug. 1757, p. 178 (AP4.M88, v. 17 Rare Bk. Coll.), states, "The observations on Comets in this pamphlet are very superficial and trifling; and those relating to the Comet expected shortly to appear, are purloined from a print lately published by Mr. Martin, representing the orbit of the said Comet."

9

La Actualidad astronómica: el cometa de Halley. Nuevo mundo, año 17, 12 mayo 1910: [4] illus. AP60.N87, v. 17

Includes diagrams showing the comet's path against the stars and among the inner planets of the solar system. See also "El Cometa Halley no chocará con la tierra," on p. [15], reproducing the diagram by Arnould Moreaux from the *Illustrated London News* of Apr. 23 (see item 2116).

10

Aiginētēs, Dēmētrios. La comète de Halley aux environs de son périhelie. Bulletin astronomique, t. 29, jan. 1912: 5–25. QB1.B9, v. 29

Bibliographic footnotes.

The observations, made at Athens, cover the period Apr. 20–May 28, 1910.

A section of the article entitled "La constitution physique des comètes" appears in a German version, "Die physische Beschaffenheit der Kometen," in *Jahrbuch der Astronomie und Geophysik*, 23. Jahrg., 1912, p. 49–52 (Leipzig, E. H. Mayer, 1913. Q9.J13, v. 23).

11

Aiginētēs, Dēmētrios. La comète de Halley et le magnétisme terrestre: l'opinion de M. Kr. Birkeland. *In* Athens. Ethnikon asteroskopeion. Annales. t. 7. Athènes, Impr. de la Cour royale A. Raftanis, 1916. p. [18] QB4.A87, v. 7

The opinion, expressed in *The Norwegian Aurora Polaris Expedition, 1902–1903* (item 268), is seen as supporting the author in his controversy with Antoniadi over the direction of the comet's tail on May 20.

12

Aiginētēs, Dēmētrios. La comète de Halley pendant sa dernière apparition. *In* Athens. Ethnikon asteroskopeion. Annales. t. 6. Athènes, Impr. de la Cour royale A. Raftanis, 1912. p. 7–26. plates. QB4.A87, v. 6

Data from an observation of the comet, made Apr. 25, 1910, with the 40-cm equatorial, appear on p. [45]. Plates with sketches of the comet as it was seen on various dates during the spring are at the end of the volume.

13

Aiginētēs, Dēmētrios. La fin d'un débat sur la comète de Halley. Athènes, 1912.

Held by the library of the British Astronomical Association (see its 1936 *Catalogue*, p. 23). A notice appears in the *Revista* de la Sociedad Astronómica de España y América, año 2, marzo de 1912, p. 48 (QB1.U65, v. 2).

14

[Aiginētēs, Dēmētrios] Ho komētēs tou Haleÿ. Hē Physis, periodos 3, t. 10, 15 ian. 1910: 229–230. AP85.P5, s. 3, v. 10

15

Aiginētēs, Dēmētrios. Observations de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 13 juin 1910: 1578–1579. Q46.A14, v. 150

Made on the night of May 19/20.

16

Aiginētēs, Dēmētrios. Observations de la comète de Halley, faites à l'observatoire d'Athènes. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 30 mai 1910: 1407–1409. Q46.A14, v. 150

Made on the night of May 18/19.

17
Aiginētēs, Dēmētrios. La queue de la comète de Halley. Astronomische Nachrichten, Bd. 188, Nr. 4496, 11. Mai 1911: columns 129–132.
QB1.A77, v. 188

Responds to Antoniadi's article in Nr. 4489.

18
Aiginētēs, Dēmētrios. Résultats définitifs de l'étude d'ensemble des observations de la comète de Halley. *In* Athens. Ethnikon asteroskopeion. Annales. t. 8. Athènes, Impr. Gérard frères, 1926. p. [7]–16.
QB4.A87, v. 8

Concludes, from a study of the reports of others, that his observation of the sunward direction of the tail and his explanation of the phenomenon are correct.

19
Aiginētēs, Dēmētrios. [Sur la comète de Halley] *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 23 mai 1910: 1285–1286.
Q46.A14, v. 150

Brief report of observations made at Athens the day of the comet's transit (May 18) and a few days thereafter.

20
Aiginētēs, Dēmētrios. Sur la constitution physique des comètes. Astronomische Nachrichten, Bd. 187, Nr. 4468, 26. Jan. 1911: columns 53–58.
QB1.A77, v. 187

Bases his conclusions on numerous observations of Halley's Comet during its 1910 return. Extensive excerpts in English appear under the heading "Concerning the Physical Constitution of Comets" in *Popular Astronomy*, v. 19, May 1911, p. 310–312 (QB1.P8, v. 19).

21
Aiginētēs, Dēmētrios. Sur la direction de la queue de la comète de Halley le soir du 20 mai 1910. Ciel et terre, 32. année, sept. 1911: 295–298.
QB1.C5, v. 32

22
Aiginētēs, Dēmētrios. Sur les phénomènes physiques présentés par la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 25 juil. 1910: 291–293.
Q46.A14, v. 151

Includes description of observations made May 27, May 29, June 3, and June 6.

23
Aiginētēs, Dēmētrios. Sur les phénomènes présentés par la comète de Halley après son passage devant le soleil. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 4 juil. 1910: 41–43.
Q46.A14, v. 151

Includes description of observations made May 23, 26, 28, and 31. The author finds that the tail is not purely gaseous but contains some solid particles.

24

Aiginētēs, Dēmētrios. Les transformations apparentes de la comète de Halley. Ciel et terre, 32. année, mars 1911: 94–99. illus., plate. QB1.C5, v. 32

Bibliographic footnotes.

On the appearance of the comet's tail on the night of May 20, 1910.

Another plate in the same issue (facing p. 90) reproduces a photograph of the comet taken June 7, 1910, at the observatory in Algiers.

25

Airy, *Sir* George B. An address delivered at the annual general meeting of the Royal Astronomical Society, February 10, 1837, on presenting the honorary medal to Professor Rosenberger. *In* Royal Astronomical Society. Memoirs. v. 10. London, J. Weale, 1838. p. [376]–389. QB1.R5, v. 10

The award was made for Rosenberger's "elaborate calculations relating to the return of Halley's Comet," and in his address Airy discusses the history of such computations from Halley's time onward.

The address was also published in the Society's *Monthly Notices*, v. 4, Feb. 1837, p. 50–60 (QB1.R7, v. 4), and, under the title "Reflections on Comets; Their Probable Nature, and the Future Service They May Render to Astronomical Science," in the *Magazine of Popular Science and Journal of the Useful Arts*, v. 3, Mar. 1837, p. 223–227 (Micro 39323).

26

Airy, *Sir* George B. Halley's Comet. Penny magazine, v. 4, Sept. 12, 1835: 360. illus. AP4.K7, v. 4

Reprinted from the *Cambridge Chronicle*.

Also published in the *Times* (London), Aug. 31, 1835, p. 3 (N&CPR).

27

Airy, *Sir* George B. Reduction of the observations of Halley's Comet made at the Cambridge observatory in the years 1835 and 1836. *In* Royal Astronomical Society. Memoirs. v. 16. London, 1847. p. 337–377. QB1.R5, v. 16

Read Jan. 8, 1847. The observations were made Sept. 2, 1835 – Jan. 27, 1836. A summary appears in the Society's *Monthly Notices*, v. 7, Jan. 1847, p. 188–189 (QB1.R7, v. 7).

28

Airy, *Sir* George B. Schreiben des Herrn Airy, Königlichen Astronomen in Greenwich, an den Herausgeber. Astronomische Nachrichten, 14. Bd., Nr. 320, 9. Nov. 1836: columns 125–126. QB1.A77, v. 14

In English.

Conveys a report from Thomas G. Taylor of 14 observations of Halley's Comet made during the period Feb. 19–Mar. 21 at the East India Company's observatory in Madras.

29

Aitken, John. Did the tail of Halley's Comet affect the earth's atmosphere? *In* Royal Society of Edinburgh. Proceedings, v. 30, pt. 7, 1910: 529–550. illus. Q41.E21, v. 30

Reports on the paper and subsequent discussion appear in the *English Mechanic and World of Science*, v. 91, July 22, 1910, p. 564 (T1.E5, v. 91), and in the *Publications* of the Astronomical Society of the Pacific, v. 22, Aug./Oct. 1910, p. 195–197 (QB1.A4, v. 22). The latter account was copied from the *Scotsman*. Summaries are given in the *Quarterly Journal* of the Royal Meteorological Society, v. 37, Jan. 1911, p. 58 (QC851.R8, v. 37), and in *Popular Astronomy*, v. 19, Mar. 1911, p. 193 (QB1.P8, v. 19).

30
Aitken, Robert G. December observations of Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 21, Dec. 1909: 259.
QB1.A4, v. 21

Made with the 36-inch refractor at the Lick Observatory on the 14th, 15th, 17th, and 18th.

31
Aitken, Robert G. Observations of Halley's Comet. *In* Lick Observatory. Lick Observatory bulletin, v. 6, no. 189, 1910: 74–75. QB4.L7, v. 6

Data on 14 observations made during the period Dec. 14, 1909 – July 11, 1910. "The December measures were made with the 36-inch equatorial, the subsequent ones with the 12-inch."

32
Aitken, Robert G. Position observations of Comet Halley. *In* Lick Observatory. Lick Observatory bulletin, v. 5, no. 170, 1909: 165.
QB4.L7, v. 5

Data from five observations made Oct. 16–Nov. 17 with the 36-inch refractor.

33
Aitken, Robert G. Visual observations of Halley's Comet, January-May, 1910. *In* Astronomical Society of the Pacific. Publications, v. 22, June 1910: 134–136. QB1.A4, v. 22

Includes detailed descriptions of the comet's appearance on May 10, 13, and 20, and of its tail in particular during the period May 18–21.

34
Akhmatov, Viktor V. I͡Arkost komety Gallei͡a. *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg*. Izvi͡estii͡a, vyp. 16, apr. 1910: 78.
QB1.R9, v. 16

Cites Ebell's figures published in *Astronomische Nachrichten*, Bd. 184, Nr. 4400 (QB1.A77, v. 184).

35
Akiba, Ryojiro, Fwu-ren Liann, Hiroki Matsuo, Kuninori Uesugi, *and* Mitsuru Ichikawa. Orbital design and technology feasibility of Halley mission. Acta astronautica, v. 7, June 1980: 797–805. illus. TL787.A27, v. 7

Reference (1): p. 805.

A paper presented at the 30th congress of the International Astronautical Federation, Sept. 17–22, 1979, at Munich.

"Missions to Halley's comet in 1985–86 are discussed. They include pre-perihelion encounter, post-perihelion encounter, the utilization of

Venus swing-by, one round mission in which the spacecraft goes the round of the Sun before the encounter and missions to the point beneath the perihelion of Halley's orbit. Technological feasibility of the small spacecraft is also discussed on the basis of the use of the improved version of M-3S launch vehicle."

36

Akiba, Ryojiro, Tomonao Hayashi, Hiroki Matsuo, Kuninori Uesugi, *and* Mitsuru Ichikawa. Status report on Planet-A, Japanese first interplanetary flight. Oxford, New York, Published for the International Astronautical Federation by Pergamon Press [1980] 10 p. illus. (IAF-80-G-286)

AIAA accession no. A81-18381.

Preprint for distribution at the 31st congress of the International Astronautical Federation, Sept. 22-28, 1980, in Tokyo.

37

Albrecht, F. Beobachtungen des Halley'schen Kometen. *In* Vereinigung von Freunden der Astronomie und kosmischen Physik, *Berlin.* Mitteilungen, 20. Jahrg., Dez. 1910: 152-156. plates. DN-Ob

Observations made May 22-26 and 31 and June 1-2 and 4. Sketches show the head as it appeared on May 23, 24, and 26.

38

Alembert, Jean L. d'. Dernière réponse de Mr. d'Alembert à Mr. Clairaut; ou, Réflexions sur l'écrit de ce dernier géomêtre, inseré dans le Journal des savans de juin 1762. Journal encyclopédique, 15. aout 1762: 73-97.

AP20.J8, 1762, v. 6

A dispute over methods of solving the three-body problem and their use in calculating the path of Halley's Comet in 1759.

39

Alembert, Jean L. d'. Lettre de Mr. d'Alembert à Mrs. les auteurs du Journal encyclopédique, servant de réponse à la lettre de Mr. Clairaut, insérée dans le Journal des savans de décembre 1761, deuxième volume. Journal encyclopédique, 15. fév. 1762: 55-76. AP20.J8, 1762, v. 2

See item 477.

40

Alembert, Jean L. d'. Réfléxions sur la comète de 1682 & 1759. *In his* Opuscules mathématiques; ou, Mémoires sur différens sujets de géométrie, de méchanique, d'optique, d'astronomie &c. t. 2. A Paris, Chez David, M. DCC. LXI. p. 218-238. QA3.A36, v. 2 Rare Bk. Coll.

40a

Alexander, George. Future brightens for Halley's Comet. Los Angeles times, Oct. 2, 1983, pt. 2: 1, 4. N&CPR

Charles Morris and John Bortle, speaking at the 1983 American Workshop on Cometary Astronomy, explain why they have concluded that magnitude predictions for the 1986 return are too low. A similar story, "Comet May Be Brighter Than Experts Predicted," appears in the *New York Times*, v. 133, Oct. 4, 1983, p. C9 (N&CPR).

41
Alexander, George. Halley's Comet sighted; last seen in 1910, the wanderer returns. Washington post, Oct. 21, 1982: D-1, D-4. N&CPR

The recovery was made by G. Edward Danielson and a graduate student, David C. Jewitt, on the night of Oct. 15/16 and confirmed on Oct. 18/19.

A slightly different version of this report appears under the headline "2 From Caltech First To Sight Halley's Comet" in the *Los Angeles Times*, Oct. 21, p. 1, 20 (N&CPR).

41a
Alexander, Wesley M., *and* James A. M. McDonnell. Hypervelocity impact on the Giotto Halley Mission dust shield: momentum exchange and measurement. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 185–187. QB723.H2R4 1983

References (9): p. 187.

"A clear determination of the size and mass distribution of the cometary dust near the comet will be possible from the in-situ measurement of the DIDSY GIOTTO experiment."

42
All about Halley's Comet. Rochester, N.Y., Rochester News Co., 1910. 20 p. DN-Ob

43
Almár, Iván. A Halley-üstökös négyezer éve. Élet és tudomány, 9. évf., 1954. jan. 20.: 71–74.

44
Alpago, Romano, *and* Giovanni Silva. Osservazioni della dispersione elettrica dell'aria e della declinazione magnetica fatte alla Specola di Padova intorno al tempo del passaggio della cometa di Halley davanti al sole. *In* Istituto veneto di scienze, lettere ed arti. Atti. t. 69, dispensa 10, pt. 2, 1910: 1169–1193. illus., plates (part fold.) AS222.V31, v. 69

Bibliographic footnotes.

Presented at the regular meeting of July 3, 1910. A summary appears in pt. 1 of the same issue, p. 216–217.

—— —— Offprint. Venezia, Premiate officine grafiche di C. Ferrari, 1910. [1169]–1193 p. illus., plates (part fold.) DN-Ob

Bibliographic footnotes.

45
Alter, Dinsmore. Comets and people. Griffith observer, v. 20, July 1956: 74–82. illus. QB1.G7, v. 20

The cover reproduces photographs of Halley's Comet taken by Ellerman at Honolulu in 1910.

Reprinted, with different illustrations, in v. 36, Oct. 1972, p. 2–8.

Mostly about popular reactions to the 1910 return of Halley's Comet, as reflected in contemporary newspapers.

46

Alter, Dinsmore, Clarence H. Cleminshaw, *and* John G. Phillips. The story of Halley's Comet. *In their* Pictorial astronomy. 5th rev. ed. New York, Harper & Row [1983] p. 188–191. illus. QB44.2.A45 1983

The index provides additional references to text and illustrations relating to the comet.

47

Amaduzzi, Lavoro, *and* Filippo Eredia. Le osservazioni meteorologiche nella notte dal 18 al 19 maggio 1910 durante la presunta congiunzione con la cometa di Halley. *In* Annuario scientifico ed industriale. anno 47; 1910. Milano, Fratelli Treves, 1911. p. 64–69.

48

Ambronn, Richard. Beobachtungen der magnetischen Deklination zu Göttingen in der Nacht vom 18. auf den 19. Mai 1910. Meteorologische Zeitschrift, Bd. 27, Juli 1910: 318–319. QC851.M3, v. 27

49

American Astronomical Society. *Comet Committee.* Circular respecting observation of Halley's Comet, 1910. [Madison, Wis., 1910] 12 p. NN

The committee consisted of George C. Comstock, chairman, Edward E. Barnard, Edwin B. Frost, Charles D. Perrine, and Edward C. Pickering.

Reprinted in a slightly abridged form as "Suggested Observations of Halley's Comet" in *Nature*, v. 82, Dec. 30, 1909, p. 260–262 (Q1.N2, v. 82), and in *Scientific American Supplement*, v. 69, Jan. 29, 1910, p. 74–75 (T1.S52, v. 69), and very briefly summarized in the *Observatory*, v. 33, Jan. 1910, p. 67–68 (QB1.O2, v. 33).

A translation by A. Nevinskai͡a, entitled "Instrukt͡sii͡a dli͡a nabli͡udenii͡a komety Gallei͡a," was published in *Izvi͡estii͡a* Russkago astronomicheskago obshchestva, vyp. 16, apr. 1910, p. 46–55 (QB1.R9, v. 16).

More recently, a somewhat enlarged facsimile was included in *The International Halley Watch; Report of the Science Working Group*, p. 61–72 ([Washington? National Aeronautics and Space Administration, 1980]; see item 1533).

50

American Astronomical Society. *Comet Committee.* Halley's Comet. Popular astronomy, v. 16, Nov. 1908: 574. QB1.P8, v. 16

A circular, signed by members of the committee (E. E. Barnard, C. D. Perrine, E. C. Pickering, and G. C. Comstock), announcing the committee's purpose—"to canvass the whole field of cometary research, inquiring what parts of that field will best repay systematic cultivation at the present time" and inviting astronomers to offer suggestions to committee members on subjects and methods of research "or such other matter as may seem of advantage in this connection."

The circular was also published in the *Astrophysical Journal*, v. 28, Dec. 1908, p. 410 (QB1.A9, v. 28), and a brief notice on the formation and purpose of the committee appears in the Royal Astronomical Society's *Monthly Notices*, v. 69, Nov. 1908, p. 7 (QB1.R7, v. 69).

51
American Astronomical Society. *Comet Committee*. Report, 1909–1913, with index catalogue of all photographs of Halley's Comet reported to the committee ... Photographs of Halley's Comet taken at Diamond Head, Hawaiian Islands, by Ferdinand Ellerman. Notes on these photographs by E. E. Barnard. *In* American Astronomical Society. Publications. v. 2. [Ann Arbor, Mich.] 1915. p. [177]–227. 28 plates. QB1.A27, v. 2

The catalog lists, in chronological order, nearly 1,600 photographs taken during the period Aug. 24, 1909–Dec. 30, 1910, at more than 40 observatories around the world. Plates 3–28 reproduce 47 of Ellerman's photographs taken Apr. 26–June 9, 1910. Barnard's preliminary report on the photographs appears on p. 66–67 of this volume.

Interim reports of the committee were presented by George C. Comstock, chairman, at the Society's 11th, 13th, and 14th meetings, held Aug. 1910, Dec. 1911, and Aug. 1912; these appear on p. 42–44, 105, and 144 of the same volume. They can also be found in *Science*, new ser., v. 32, Dec. 16, 1910, p. 887 (summary); v. 35, May 3, 1912, p. 713–714 (in full); and v. 37, Jan. 3, 1913, p. 39 (summary) (Q1.S35, n.s., v. 32, 35, 37).

52
Amici, Giovanni B. Changements de forme dans la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 21 déc. 1835: 503. Q46.A14, v. 1

In a letter to Arago, he reports observations made at Florence during October.

53
Ammar, Arlène, *and* Josette Runavot. La mission Vega. L'Aeronautique et l'astronautique, no 2, 1982: 55–61. illus., ports. TL502.A3312, 1982

Details of the Soviet-French mission to Venus and Halley's Comet.

54
An den Halleyschen Kometen. Fliegende Blätter, 132. Bd., Nro. 3377, [15. Apr. 1910]: 194. AP105.F6, v. 132

Quatrain, signed H. E., asking the comet to bring a good vintage, as an earlier comet had done.

55
[Anderson, Charlene M.] Will Halley's Comet come as close to the earth in 1986 as it did in 1910? Will it be as spectacular? Planetary report, v. 2, Mar./Apr. 1982: 15. illus. QB600.P54, v. 2

Response to a query from Harvey Karns of Oklahoma City.

56
Anderson, Norman D., *and* Walter R. Brown. Halley's Comet. Illustrated with photos. and prints. New York, Dodd, Mead [1981] 78 p. illus., ports. QB723.H2A56

For young readers.

"Appearances of Halley's Comet": p. 73–75. Lists 30 apparitions by date, with notes.

Reviewed by Wade Hancock in the *Christian Science Monitor*, v. 74, Dec. 14, 1981, p. B-11 (N&CPR), and by Carolyn Caywood in *SLJ: School Library Journal*, v. 28, Jan. 1982, p. 72 (Z675.S3S29115, v. 28).

57

André, Charles L. F. La comète de Halley. *In* Académie des sciences, belles-lettres et arts, *Lyons*. Mémoires. Sciences et lettres. 3. sér., t. 11. Paris, J.-B. Baillière, 1911. p. [69]–75. illus.
AS162.L812, s. 3, v. 11

58

André, Charles L. F. Sur le passage de la terre dans la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 23 mai 1910: 1295.
Q46.A14, v. 150

Bad weather prevented astronomical observations during the period May 14–19, and instruments measuring electrical and magnetic phenomena registered nothing abnormal.

59

Andrews, E. C. The danger of the comet. Pearson's magazine, v. 28, Dec. 1909: 610–618. illus. (part col.)
AP4.P35, v. 28

"Illustrated by Koek-Koek."

Dr. Crommelin, addressing a meeting of the British Astronomical Association on Dec. 29, 1909, stated that this "sensational article . . . was a revival of the worst type of comet panic."

60

Andrews, Frank. Halley's Comet. Some deep frozen pre-history of our solar system about to be defrosted. Southern stars, v. 30, June 1983: 251–254.
QB1.R788, v. 30

Reference (1): p. 254.

"With the recovery of Halley's Comet the study of comets is taking on fresh impetus. By making detailed observations of this comet in 1985–1986 astronomers hope to learn much more about the very early history of our solar system."

61

Anestin, Victor. [La comète de Halley] English mechanic and world of science, v. 91, June 10, 1910: 424.
T1.E5, v. 91

Letter to the editor from Bucharest reporting observations of the comet's tail early in the morning of May 19 from various places in Romania.

62

Angot, Alfred. Variations magnétiques et électriques dans la nuit du 18 au 19 mai 1910. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 23 mai 1910: 1371–1372. illus.
Q46.A14, v. 150

63

Ansel, A. Die luftelektrischen und meteorologischen Ergebnisse der Beobachtungen in Island vom 10. Mai bis 2. Juni 1910 anlässlich des Durchganges des Halleyschen Kometen. *In* Akademie der Wissenschaften, *Göttingen. Mathematisch-physikalische Klasse*. Nachrichten aus dem Jahre 1912. Berlin, Weidmannsche Buchhandlung, 1912. p. [76]–111. fold. illus.
AS182.G822, 1912

64
Antoniadi, Eugène M. The alleged sunward direction of the tail of Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 20, June 1910: 492–493. QB1.B75, v. 20
Letter to the editor.
Bibliographic footnotes.

65
Antoniadi, Eugène M. La comète de Halley le soir du 20 mai 1910. Ciel et terre, 32. année, juin 1911: 185–186. QB1.C5, v. 32
Bibliographic footnotes.
A note commenting on Eginitis' report in the mars 1911 issue that on the night of May 20 he saw the tail of the comet extending in a sunward direction.

66
Antoniadi, Eugène M. Les comètes, considérées en général comme des présages sinistres dans l'histoire. *In* Société astronomique de France. Bulletin, 52. année, avril 1938: 157–168. illus. QB1.S6, v. 52
Presents extracts from Greek, Roman, and Byzantine writers relating to 39 comets, of which six are apperitions of Halley's Comet.

67
Antoniadi, Eugène M. Halleyscher Komet. Astronomische Nachrichten, Bd. 195, Nr. 4668, 16. Juli 1913: columns 239–240. QB1.A77, v. 195
In French.
Concerning the direction of the comet's tail on the night of May 20.

68
Antoniadi, Eugène M. Le noyau de la comète de Halley dans le grand équatorial de Meudon. *In* Société astronomique de France. Bulletin, 24. année, août 1910: 371. illus. QB1.S6, v. 24
A sketch shows the nucleus as seen on May 24.

69
Antoniadi, Eugène M. Sur la direction de la queue de la comète de Halley le soir du 20 mai 1910. Astronomische Nachrichten, Bd. 188, Nr. 4489, 3. Apr. 1911: columns 15–16. QB1.A77, v. 188
Cites reports of nine observers who saw the comet's tail directed away from the sun at very nearly the same time as Prof. Eginitis, who states that the tail was directed toward the sun.

70
Antoniadi, Eugène M. Sur la direction de la queue de la comète de Halley le soir du 20 mai 1910. Ciel et terre, 32. année, déc. 1911: 418–426. illus. QB1.C5, v. 32
Bibliographic footnotes.
In response to the article by Eginitis in the sept. 1911 issue.

71
Antoniadi, Eugène M. The tail of Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 22, May 1912: 393. QB1.B75, v. 22
Letter to the editor.

72

Antoniazzi, Antonio M. Osservazioni di comete e di pianeti fatte all'equatoriale Dembowski del R. Osservatorio Astronomico dell'Università di Padova. Astronomische Nachrichten, Bd. 188, Nr. 4511, 10. Juli 1911: columns 381–384. QB1.A77, v. 188

Includes observations of Halley's Comet made Jan. 14–June 11, 1910.

73

Antoniazzi, Antonio M. Posizioni del nucleo e direzione della coda della cometa di Halley, nell'attuale sua apparizione, osservate alla Specola di Padova. Nota. *In* Istituto veneto di scienze, lettere ed arti. Atti. t. 69, dispensa 10, pt. 2, 1910: 1213–1247. fold. plate AS222.V31, v. 69

Bibliographic footnotes.

Presented at the regular meeting of July 3, 1910. A summary appears in pt. 1 of the same issue, p. 214–216.

Includes data and notes from observations made Jan. 14–June 11, 1910.

—— —— Offprint. Venezia, Premiate officine grafiche di C. Ferrari, 1910. [1213]–1247 p. fold. plate. QB723.H2A6

Bibliographic footnotes.

74

Anzeige dass der im Jahre 1682 erschienene und von Halley nach der Newtonianischen Theorie auf gegenwärtige Zeit vorherverkündigte Comet wirklich sichtbar sey; und was derselbe in der Folge der Zeit für Erscheinungen haben werde, von einem Liebhaber der Sternwissenschaft. Hamburgisches Magazin, 22. Bd., 3. Stück, 1759: 313–325.
Q3.H3, v. 22 Rare Bk. Coll.

A pamphlet with the same title, published Jan. 24, 1759 (Leipzig, Bey B. C. Breitkopf. 16 p.), is held by Stanford University. A notice of the pamphlet appears in the *Neue Zeitungen von gelehrten Sachen*, 5. Feb. 1759, p. 103–104 (AP30.N56, 1759).

75

Apáthy, István. Plazmamérések a Halley-üstökösnél. Élet és tudomány, 37. évf., 1982. VI. 4.: 707–710. illus. (part col.) Q44.E5, v. 37

76

Apianus, Petrus. Cometarvm primvs anno 1531 luxit. *In his* Astronomicum caesareum. [Ingolstadii, 1540] p. [103]–[109] col. illus.
QB41.A64 copy 2 Rare Bk. Coll.

Details of observations made Aug. 6, 13–18, and 22–23, 1531.

77

Apianus, Petrus. Practica auff dz. 1532. Jar . . . Auch wirdt nachuolgend von dem nechst erschinen Cometen, wie vnnd in was gestalt in gemelter Apianus obseruirt hat: vñ welhe biss her, dero vil sindt, in jrem schreiben jrrig gefunden, bewerlich angezaygt. Landsshut, Gedruckt durch G. Apianum [1531] [75] p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 2.

78
Apostrophe to the approaching comet. New monthly magazine, v. 44, May 1835: 89–90. AP4.N5, 1835, v. 2

Poem, reprinted in the *Museum of Foreign Literature, Science, and Art*, v. 27, July 1835, p. 107 (AP2.M89, v. 27).

79
[Apparition de la comète] Mercure de France, avril 1759, 2. v.: 181–183. AP20.M48, 1759 Rare Bk. Coll.

80
Appearance of Halley's Comet. London and Edinburgh philosophical magazine and journal of science, v. 7, Sept. 1835: 236.

Brief summary of reports contributed to the daily press by Dr. Hussey and Sir James South.

81
The Approach of Halley's Comet—a sight to be seen now or never by this generation. Sphere, v. 41, May 7, 1910: 122–123. illus. AP4.S73, v. 41

82
The Approaching comet. Army and Navy chronicle, v. 1, Aug. 27, 1835: 279. U1.A6, v. 1

Brief history, predictions of its forthcoming return, and speculations as to its luminosity, copied from the *Baltimore Young Men's Paper*.

83
The Approaching plunge of the earth through the tail of Halley's Comet. Current literature, v. 48, May 1910: 511–514. illus. Micro 05422, reel 700

84
Arago, Dominique François Jean. Astronomie populaire. t. 2. Œuvre posthume. Paris, Gide et J. Baudry, 1855. 554 p. illus., plates. (*His* [Œuvres complètes, t. 14]) Q113.A75, v. 14

Livre 17, "Les comètes" (p. 261–484), includes two chapters on Halley's Comet—"Orbite de la comète de 1759 ou de Halley" (p. 278–287) and "Des changements d'aspect présenté par la comète de Halley" (p. 367–375)—as well as numerous scattered references, e.g., notes of 1835 observations by himself, Schwabe, Cooper, Amici, and Bessel, on p. 393–396, and in several comet catalogs; these references can be traced through the detailed index in t. 4 of the full work. A plate following p. 256 shows the orbit of Halley's Comet in relation to those of the planets and several comets of shorter period. Two plates following p. 384 include 17 sketches of the comet made during its 1835–36 return, the last seven illustrating "aigrettes" or jets.

An English version, *Popular Astronomy*, translated and edited by W. H. Smyth and Robert Grant, was published in two volumes in London by Longman, Brown, Green, and Longmans in 1855 (QB44.A65). Book 17, "The Comets," appears on p. [521]–669 of v. 1. The two chapters cited above, "Orbit of the Comet of 1759 or Halley's Comet" (p. 532–538) and "On the Changes of Aspect Exhibited by Halley's Comet" (p. 592–597), as well as additional references and the cited illustrations (plates [illegible] included.

85

Arago, Dominique François Jean. Changemens physiques dans la tête de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 19 oct. 1835: 235–236. Q46.A14, v. 1

Observations made Oct. 15–18.

Reprinted in his *Œuvres complètes*, t. 11, p. 489–491 (Paris, Gide, 1859. Q113.A75, v. 11).

86

Arago, Dominique François Jean. Comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 24–31 août 1835: 66, 87. Q46.A14, v. 1

Reports on observations made at the Paris observatory beginning Aug. 20.

Reprinted in his *Œuvres complètes*, t. 11, p. 482–483 (Paris, Gide, 1859. Q113.A75, v. 11).

87

Arago, Dominique François Jean. Comète de Halley ou de 1759. *In his* Leçons d'astronomie professés à l'Observatoire royal. Recueillies par un de ses élèves. 4. éd. Paris, Chamerot, 1845. p. 324–327. QB44.A62

A somewhat shortened English version by R. W. Haskins, "Comet of 1759," appears in *Astronomy for Schools; Upon the Basis of Mons. Arago's Lectures at the Royal Observatory of Paris*, p. 192–194 (New York, Robinson, Pratt, 1841. QB44.A63).

An even shorter version, "The Comet of 1759," by Walter K. Kelly, occurs in *Popular Lectures on Astronomy*, p. 38 (London, Whittaker, MDCCCXLI. QB44.A635). A fifth edition of this work, revised by Lewis Tomlinson, presents "The Comet of 1759" on p. 118–119 (London, G. Routledge, 1854. QB44.A639).

Lardner's edition of Arago's lectures is described in item 1786.

88

Arago, Dominique François Jean. Des comètes en général, et en particulier de la comète qui doit reparaître en 1832 et dont la révolution est de 6 ans $\frac{3}{4}$. *In* France. *Bureau des longitudes*. Annuaire pour l'an 1832. 2. éd., rev., corr. et considerablement augm. Paris, Bachelier, 1832. p. 156–383. QB9.F8, 1832

"Comète de 1759": p. 174–181.

—— Des comètes en général, et en particulier de celles qui doivent paraître en 1832 et 1835. Extrait de l'Annuaire de 1832. 3. éd. Paris, Bachelier, 1834. 231 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 398.

"Comète de 1759": p. 19–26.

A separately published English translation by John Farrar entitled *Tract on Comets; and Particularly on the Comet That Is To Intersect the Earth's Path in October, 1832* (Boston, Hilliard, Gray, 1832. 89 p. QB721.A48) contains the chapter, "Comet of 1759," on p. 13–17.

Another translation, by Charles Gold—*The Comet: Scientific Notices of Comets in General, and in Particular of the Comet of 1832, Whose Revolution Is of Six Years and Three Quarters' Duration* (London, Baldwin and Cradock, 1833. 124 p. QB721.A5)—presents the chapter, "Of the Comet of 1759," on p. 14–18, with a footnote continuing to p. 19.

See also "Arago on Comets" in the *North American Review*, v. 42, Jan. 1836, p. 196–216 (AP2.N7, v. 42).

89

Arago, Dominique François Jean. Sur la comète de 1759 ou de Halley. *In his* Œuvres. Mémoires scientifiques. t. 2. Paris, Gide, 1859. (*His* Œuvres complètes, t. 11) p. 473–504. Q113.A75, v. 11

Reprints articles (some of them revised or abridged) that originally appeared in the *Comptes rendus* of the Académie des sciences and elsewhere.

90

Arago, Dominique François Jean. Sur la comète qui doit passer au périhélie en novembre 1835. *In* France. *Bureau des longitudes.* Annuaire pour l'an 1835. Paris, Bachelier, 1834. p. [259]–263. QB9.F8, 1835

An English translation, "On the Comet Which Will Pass Its Perihelion in November 1835," appears in the *Edinburgh New Philosophical Journal*, v. 19, July 1835, p. 31–34 (Q1.E27, v. 19).

Most of the French text is reprinted in Arago's *Œuvres complètes*, t. 11, p. 477–481 (Paris, Gide, 1859. Q113.A75, v. 11).

91

Arago, Dominique François Jean. Sur la dernière apparition de la comète de Halley. *In* France. *Bureau des longitudes.* Annuaire pour l'an 1836. Paris, Bachelier, 1835. p. [189]–237. QB9.F8, 1836

Most of this article was incorporated in the author's *Astronomie populaire*, livre 17. Omitted passages can be found in his *Œuvres complètes*, t. 11, p. 498–504 (Paris, Gide, 1859. Q113.A75, v. 11).

92

Arago, Dominique François Jean. Sur la nature de la lumière des comètes. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 1, 26 oct. 1835: 255–258. Q46.A14, v. 1

From observations of the polarization of the light of Halley's Comet, he concludes that at least part is reflected from the sun. An English translation, "On the Nature of the Light of Comets," appears in the *Edinburgh New Philosophical Journal*, v. 20, Jan. 1836, p. 170–172 (Q1.E27, v. 20).

The French text is reprinted in Arago's *Œuvres complètes*, t. 11, p. 491–495 (Paris, Gide, 1859. Q113.A75, v. 11).

93

Arago, Dominique François Jean. Sur le prochain retour de la comète de 1759. Annales de chimie et de physique, [2. sér.], t. 9, [nov.?] 1818: 190–193. QD1.A7, s. 2, v. 9

Reprinted in his *Œuvres complètes*, t. 11, p. 473–477 (Paris, Gide, 1859. Q113.A75, v. 11).

94

Archenhold, Friedrich S. Beobachtung der Bedeckung eines Sternes durch den Kern des Halleyschen Kometen mit dem grossen Fernrohr der Treptow-Sternwarte am 5. Dezember 1909. Astronomische Nachrichten, Bd. 183, Nr. 4383, 18. Jan. 1910: columns 237–240. illus. QB1.A77, v. 183

A diagram shows the comet's path, the occulted star, and three other nearby stars. A similar article with a somewhat different title in *Das Weltall*, 10. Jahrg., 15. Jan. 1910, p. 108–109 (QB1.W4, v. 10), includes a corrected ephemeris for the period Feb. 4–Mar. 1.

Reported as "Occultation d'une étoile par la comète de Halley" in the *Bulletin* of the Société astronomique de France, 24. année, avril 1910, p. 192 (QB1.S6, v. 24).

95

Archenhold, Friedrich S. Der gestirnte Himmel im Monat August 1909. Das Weltall, 9. Jahrg., 1. Juli 1909: 283–284. illus. QB1.W4. v. 9

Discusses and illustrates the path of Halley's Comet for the period Jan. 1, 1907–Feb. 1, 1911. Another chart on p. 286–287 of the same issue shows the path for the period Aug. 5, 1909–Jan. 1, 1911.

Similar charts appear in subsequent issues as follows: the path for Feb. 4–May 30, 1910, in 10. Jahrg., 1. Feb. 1910, p. 129; for Mar. 1–May 30, in the issues of 1. März and 1. Apr., p. 163 and p. 191; for May 10–July 31, in the issue of 1. Mai, p. 225; and for May 25–July 31, in the issue of 1. Juni, p. 255. The issue of 1. Mai also includes, on p. 227, a short ephemeris entitled "Örter des Halleyschen Kometen für die Zeit vom 1. Juni bis 29. Juni 1910."

96

Archenhold, Friedrich S. Der Halleysche Komet. Marine-Rundschau, 21. Jahrg., 1. T., Mai 1910: 626–629. illus. V3.M3, v. 21

97

Archenhold, Friedrich S. Der Halleysche Komet im Monat Mai 1910. Das Weltall, 10. Jahrg., 1. Sept. 1910: 339–341. plate. QB1.W4, v. 10

The plate, which precedes the article, reproduces photographs taken by Barnard (May 3) and Morehouse (May 5 and 13), and sketches by the author (May 23 and 24).

98

Archenhold, Friedrich S. Der Halleysche Komet und seine bevorstehende Wiederkehr. Das Weltall, 7. Jahrg., 1. Feb. 1907: 129–133. illus., plate. QB1.W4, v. 7

The plate, which precedes the article, reproduces a sketch of the comet made Jan. 28, 1836, by Sir John Herschel. The text and illustration from a 17th-century leaflet by Honold are included in the article.

99

Archenhold, Friedrich S. Komet Halley am 16. Mai 1910. Das Weltall, 11. Jahrg., 2. Juniheft 1911: 283. illus. QB1.W4, v. 11

Summarizes a report from the Zô-sè observatory near Shanghai where the sun was observed during the period of the comet's transit on May 19. A sketch of the comet's head, made May 16 by Chevalier, is reproduced.

Also noted are reports of atmospheric observations made on May 19 at Ekaterinoslav, Halle, and Bologna.

100
Archenhold, Friedrich S. Kometen, Weltuntergangsprophezeiungen und der Halleysche Komet. Treptow-Berlin, Verlag der Treptow-Sternwarte, 1910. 84 p. illus., facsims., port.
CU; MA; MH; MWelC; NN; NPV; PSC; PU; RPB
"Verzeichnis von 75 alten Kometen-Eindruckblättern, chronologisch geordnet": p. [75]–84.
——— 2. und 3. Aufl. Berlin-Treptow, Verlag der Treptow-Sternwarte, 1910. 89 p. illus., facsims., ports. ICU
"Verzeichnis von 77 alten Kometen-Eindruckblättern, chronologisch geordnet": p. [79]–89.

101
Archenhold, Friedrich S. Ein neuer Brief von Bessel über Kometen. Das Weltall, 4. Jahrg., 1. Mai 1904: 286–287. QB1.W4, v. 4
The text of the letter, dated Jan. 20, 1836, and addressed to Dr. Nürnberger, is given in full; it concerns Bessel's observations of Halley's Comet and the conclusions he drew from them.

102
Archenhold, Friedrich S. Neues Verzeichnis von alten Kometeneinblattdrucken. Das Weltall, 11. Jahrg., 2. Augustheft–1. Septemberheft 1911: 338–342, 349–352. illus., plates. QB1.W4, v. 11
Lists a number of old broadsides about comets, supplementing the list published in his *Kometen, Weltuntergangsprophezeiungen und der Halleysche Komet*. A few of these concern the 1531 and 1682 appearances of Halley's Comet. The plates reproduce from Lubieniecki's *Theatrum Cometicum* (see item 1899) illustrations depicting the comet's path in 684, 837, 1066, 1301, 1456, 1531, and 1607.

103
Archenhold, Friedrich S. Weltuntergangsprophezeiungen. Das Weltall, 7. Jahrg., 1. Apr. 1907: 189–193. illus., port. QB1.W4, v. 7
Discussing comets as harbingers of misfortune, the article gives much of its attention to Halley's Comet and reproduces an engraving of a marvelous egg with a starry design on its shell, laid by a hen in Marburg on Aug. 26, 1682, shortly after that comet had become visible. The portrait, preceding the article, is of Palitzsch, the first to find the comet in 1758.

104
Archenhold, Friedrich S. Die Wiederkehr des Halley'schen Kometen. Das Weltall, 10. Jahrg., 15. Okt. 1909: 13–15. illus., port. QB1.W4, v. 10
Reproduces Wolf's discovery photograph of Sept. 11, and Crommelin's ephemeris for Oct. 27–Dec. 26, 1909, from *Astronomische Nachrichten*, Bd. 182, Nr. 4359, 28. Sept. 1909 (QB1.A77, v. 182). A plate with a portrait of Halley precedes the article.

105
Archer's clock-work map of the heavens, shewing the path of Halley's Comet, at any hour at night. London, Gilbert, 1835.

Advertised in *Bent's Monthly Literary Advertiser*, Sept. 1835, p. 103 (Z2005.B47, 1835), and in the *Times* (London), Sept. 16, 1835, p. 3 (N&CPR).

105a

Arduini, M., *and others*. The comet Halley flyby I.R. sounder "I.K.S." *In* Advanced space instrumentation in astronomy. Proceedings of symposium 4 of the COSPAR twenty-fourth plenary meeting held in Ottawa, Canada, 16th May–2nd June 1982. Edited by R. M. Bonnet. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 4) p. 113–122. illus.

References (6): p. 122.

"An infrared sounder is being developed in France to observe in 1986 Comet Halley from the Soviet 'VEGA' flyby probes."

106

Argentieri, Domenico. Nuova determinazione della cronologia neotestamentaria e identificazione della stella dei Magi con la cometa di Halley. Aquila, Unione editrice Scrutamini Scripturas, 1914. 35 p.

Copies are ascribed to the Biblioteca Nazionale Centrale, Florence; the Biblioteca Nazionale Centrale, Rome; and the Biblioteca Casanatense, Rome.

107

Argentieri, Domenico. Le ventisei apparizioni della cometa dei Magi. *In his* Quando visse Cristo? Milano, Fratelli Bocca, 1945. (Piccola biblioteca di scienze moderne, n. 482) p. [115]–122. BT303.A7

The author argues that Halley's Comet in its 12 B.C. apparition was the star that led the Wise Men to Jerusalem. See also his earlier chapter, "Una Stella in Oriente" (p. [96]–101).

108

Arnold, Armin. Halley's Comet and Jakob van Hoddis' poem "Weltende." *In* German expressionism. Special editor: Victor Lange. New York, Published for the Council on National Literatures by Griffon House Publications, 1978 [©1979] (Review of national literatures, v. 9) p. 47–58. PT405.G47

References (12): p. 58.

A reworked version in English of the author's article, "Ist der Halleysche Komet am Expressionismus schuld? Eine Klärung der Missverständnisse um Jakob van Hoddis' Gedicht 'Weltende,'" published in the *Neue Zürcher Zeitung*, 191. Jahrg., 29. Nov. 1970, p. 51–52 (N&CPR).

109

Arnold, Arthur. [Halley's Comet] English mechanic and world of science, v. 91, Feb. 18, 1910: 61. T1.E5, v. 91

In a letter to the editor, implies that Col. Watson copied his diagram of the comet's orbit from the jan. 1910 issue of the *Bulletin* of the Société astronomique de France. Watson's response, as well as a rejoinder from Edwin Holmes, appears in the Feb. 25 issue of the *English Mechanic*, p. 82. Another letter from Watson touching on the same subject can be found in the Mar. 11 issue, p. 126.

110
Arrhenius, Svante A. Die erwartete Begegnung der Erde mit dem Halleyschen Kometen. Die Woche, 12. Jahrg., 30. Apr. 1910: 725–727.
Micro 27817

A drawing by Lucien Rudaux, showing the path of the comet, is reproduced on p. 739.

111
Arrhenius, Svante A. Den Halleyska kometen. Nordisk tidskrift för vetenskap, konst & industri, 3. häftet, 1910: 171–181. illus. AP48.N8, 1910

112
Arrivée de la comète de Halley. La Nature, 38. année, 21 mai 1910, suppl.: 193. Q2.N2, v. 38.1

Describes the appearance of the comet's tail as seen on the morning of May 16 by Lucien Rudaux at his observatory in Donville.

113
Artom, G. Lo scontro della cometa. Milano, Società editrice milanese [1910] 24 p.

Copies are ascribed to the Biblioteca Nazionale Centrale, Florence, and the Biblioteca Nazionale, Milan.

114
Ash, Russell, *and* Ian Grant. Comets; [earth's most mysterious visitors from space. New York?] Bounty Books [1973] 48 p. illus., facsims., ports.
QB721.5.A82

Halley's Comet: p. 44–45. Other references to this comet occur throughout the volume.

115
Asimov, Isaac. Change of time and states. Magazine of fantasy and science fiction, v. 62, Apr. 1982: 133–143. AP2.M2344, v. 62

Describes the crucial events occurring on earth during each of 32 appearances of Halley's Comet but goes on to say this does not provide any support for astrology, and that he could draw up a similar set of events for any list of dates from 700 B.C. on, spaced regularly or irregularly.

116
Asimov, Isaac. The comet that returned. *In his* How did we find out about comets? Illustrated by David Wool. New York, Walker [1975] (How did we find out . . . ? series) p. 33–42. illus., port. QB721.5.A84

For children. Additional references to Halley's Comet are listed in the index.

117
Asimov, Isaac. The long ellipse. Magazine of fantasy and science fiction, v. 62, Jan. 1982: 137–147. AP2.M2344, v. 62

Chiefly about Halley's Comet.

118
Astbury, Thomas H. Halley's Comet. English mechanic and world of science, v. 91, Feb. 4, 1910: 11. T1.E5, v. 91

In a letter to the editor, reports finding the comet easily on Jan. 29 with a 3½-inch refractor at Wallingford.

119
The Astronomer's love song. Punch, v. 138, May 11, 1910: 330.
AP101.P8, v. 138

Poem. The astronomer forsakes all his other interests to look for Halley's Comet.

120
Astronomers now trying to rally public for U.S. space mission to Halley's Comet. Comet news service, Apr. 23, 1981: 1–2. DN-Ob

121
Astronomical Society of the Pacific. Minutes of the meeting . . . held at Chabot Observatory, Oakland, California, January 29, 1910, at 8 o'clock. *In its* Publications, v. 22, Feb. 1910: 44–45. QB1.A4, v. 22

Briefly summarizes a "timely and attractive paper on Halley's Comet, illustrated with lantern slides" presented by R. T. Crawford. Before the meeting, members were given a chance to view the comet through the observatory's telescope. "The meeting was one of the most successful and enjoyable held by the Society for many years."

122
Astronomie. La Feuille nécessaire, 7 mai–11 juin 1759: 197–198, 212–213, 231–232, 244, 263–264, 280.

Weekly reports on Messier's observations of the comet.

123
Astronomische Gesellschaft. Bekanntmachung. Astronomische Nachrichten, Bd. 182, Nr. 4366, 1. Nov. 1909: columns 375–376. QB1.A77, v. 182

Signed by H. von Seeliger, R. Lehmann-Filhés, and G. Müller.

Announces award of its prize for the most accurate calculation of the 1910 return of Halley's Comet to Cowell and Crommelin.

124
Astronomische Gesellschaft. Erklärung betreffs der Astronomischen Gesellschaft bezüglich des Halleyschen Kometen. Astronomische Nachrichten, Bd. 178, Nr. 4270, 21. Aug. 1908: columns 367–368. QB1.A77, v. 178

Signed by Lehmann-Filhés, Müller, and Seeliger.

States that published calculations are eligible for the prize so long as the authors are not identified.

125
Astronomische Gesellschaft. Mitteilung betreffend das Preisausschreiben der Astronomischen Gesellschaft über den Halleyschen Kometen. *In its* Vierteljahrsschrift, 45. Jahrg., 1./2. Heft, 1910: 2–4. QB1.A7, v. 45

On the results of the competition, with details on the method and presentation of Cowell and Crommelin's winning essay.

126
Astronomische Gesellschaft. Preisausschreiben der Astronomischen Gesellschaft. *In its* Vierteljahrsschrift, 39. Jahrg., 3. Heft, 1904: 149.
QB1.A7, v. 39

Announces that a prize of a thousand marks, furnished by A. F. Lindemann, will be awarded by the society for the most accurate calculation of the next appearance of Halley's Comet, to be submitted by Dec. 31, 1908. Signed by the society's president, H. Seeliger. The same text under a slightly different title, dated Oktober 1904 and signed also by R. Lehmann-Filhés and G. Müller, appears in *Astronomische Nachrichten*, Bd. 166, Nr. 3977, 12. Nov. 1904, columns 271–272 (QB1.A77, v. 166).

The donor of the prize was the father of F. A. Lindemann, later Lord Cherwell, who served as Churchill's scientific adviser during the Second World War.

127

Astronomische Vorstellung des neu entdeckten Comet-Sterns, welcher, im Monat-Junii A. 1770. um 2. Uhr des Nachts, in seiner ortentlichen Lage ist observiret worten. [Nürnberg? 1770] broadside. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C4. 48.

Included in the engraving, by Johann C. Berndt, which shows the constellations Scutum Sobiesci, Serpentarius, and Serpens, is the track (C) of the comet of 1607.

128

Atkins, Kenneth L., *and* Charles Terwilliger. Ion drive: a step toward "Star Trek." AIAA International 12th Electric Propulsion Conference, Key Biscayne, Florida/November 15–17, 1976. New York, American Institute of Aeronautics and Astronautics, 1976. 8 p. illus. ([AIAA paper] 76–1069) Sci RR

References (11): p. 8.

Among the applications considered is a Halley's Comet rendezvous mission. The power of the ion drive for this mission is compared with that of the solar sail.

129

Atkins, Kenneth L. The ion drive program: comet rendezvous issues for SEPS developers. AIAA/DGLR 14th International Electric Propulsion Conference, Princeton, New Jersey, October 30–November 1, 1979. New York, American Institute of Aeronautics and Astronautics [1979] 6 p. illus. (AIAA paper 79–2066) Sci RR

References (7): p. 6.

130

Auer, Rolf D., Günther Lehn, *and* Egbert F. Petelski. GIOTTO—a European spacecraft will explore Halley's Comet. Dornier post (English ed.), no. 4, 1981: 44–49. illus. (part col.)

Includes a list of the 10 experiments to be carried by the spacecraft and the names of the principal investigators.

130a

Aufnahmen des Halleyschen Kometen. Photographische Mitteilungen, 48. Jahrg., 1. Juliheft, 1911: 205. TR1.F72, v. 48

131

Aufsuchungsephemeride des Halleyschen Kometen. Astronomische Nachrichten, Bd. 179, Nr. 4294/4295, 31. Dez. 1908: columns 369–372.
QB1.A77, v. 179

Submitted to the Astronomische Gesellschaft in its competition for the Lindemann prize. Positions are calculated for the period Dec. 28, 1908–Dec. 28, 1910.

Positions for Jan. 7–Dec. 23, 1909, are reprinted in *Popular Astronomy*, v. 17, Feb. 1909, p. 108–109 (QB1.P8, v. 17).

132

Augenzeugen berichten über Komet Halley. Sterne und Weltraum, 21. Jahrg., Jan. 1982: 24–25.
QB1.S854, v. 21

Recollections of some who saw the comet in 1910.

133

Augereau, J. F. Avant l'étude de la comète de Halley: les Soviétiques offrent aux Français de participer à des expériences sur la sol de Vénus. Le Monde, 38. année, 12 fév. 1981: 11.
N&CPR

134

Augouard, Prosper P., *Abp.* [La fameuse comète] *In his* 36 années au Congo, suite de "28 années au Congo"; lettres de Mgr Augouard de 1905 à 1910. t. 3. [Poitiers, Société française d'imprimerie et de librairie, 1914] p. 379.
BV3625.K7A78

In a letter dated Brazzaville, 2 juin 1910, to his brother Louis in Poitiers, the author describes the appearance of the comet during May and the fear it caused among the local population, who ate all their food stocks in the unshakable expectation that the world was coming to an end.

135

Das Aussehen des Halleyschen Kometen in den Monaten Februar bis April 1910. Sirius, 43. Bd., Juli 1910: 162–163. plate.
DN-Ob

The plate (facing p. 145) reproduces a photograph taken by Curtis on Feb. 5 and sketches made at Juvisy by Baldet on Mar. 5 and by Quénisset on Apr. 18.

136

Austin, Robert E., Russell E. Dod, *and* Donald Grim. Solar electric propulsion for the Halley's Comet rendezvous mission: foundation for future missions. AIAA 16th Aerospace Sciences Conference, Huntsville, Alabama/January 16–18, 1978. [New York, American Institute of Aeronautics and Astronautics, 1978] 7 p. illus. ([AIAA paper] 78–83)
Sci RR

References (7): p. 7.

Presents an overview of solar electric propulsion and describes the SEP technology required for a Halley's Comet rendezvous mission.

137

Austin, Robert E. Solar electric propulsion system (SEPS): tomorrow's propulsion system—today. *In* AIAA/DGLR International Electric Propulsion Conference, *Princeton, N.J., 1979.* Electric propulsion and its applications to space missions; technical papers. Edited by Robert C. Finke. New York, American Institute of Aeronautics and Astronautics [1981] (Progress in astronautics and aeronautics, v. 79) p. 46–56. illus. ([AIAA] paper 79-2045) TL507.P75, v. 79

References (4): p. 56.

Includes a brief description of the Halley flyby/Tempel 2 rendezvous mission, one of five for which the SEPS was developed.

138

BAe wins Giotto comet probe. Flight international, v. 118, Nov. 22, 1980: 1958. TL501.F5, v. 118

"British Aerospace Dynamics (Bristol) has been chosen as prime contractor for the European Space Agency (ESA) comet probe, Giotto, which will visit Halley's Comet in March 1986."

139

Babadzhanov, Pulat B., *and* I͡U. V. Obrubov. Ėvoli͡ut͡sii͡a orbit komety Gallei͡a i meteornykh roev Orionid i ėta-Akvarid. *In* Akademii͡a nauk Tadzhikskoĭ SSR, *Dushanbe*. Doklady, t. 22, no. 4, 1979: 235–237. AS581.S8, v. 22

References (9): p. 237.

Summary in Tajik.

140

Babadzhanov, Pulat B., *and* I͡U. V. Obrubov. Ėvoli͡ut͡sii͡a orbit komety Gallei͡a i meteornykh roev Orionid i η-Akvarid na intervale 15000 let. *In* Akademii͡a nauk Tadzhikskoĭ SSR. Institut astrofiziki. Bi͡ulleten. no. 71. Dushanbe, Izd-vo Donish, 1982. p. 11–15. DN-Ob

References (8): p. 15.

"The evolution of orbits of Orionid and η-Aquarid meteor streams and Halley's comet under the influence of secular perturbations was investigated. Halphen-Gorjachev's method was used and Poynting-Robertson's nongravitational effect was taken into account. The mean orbits of the streams in the period from -3500 to -3000 years appeared to have almost the same spatial orientations. The disposition of the stream orbits relative to the comet orbit changed insignificantly. The minimal distances between streams and comet orbits are $4 \cdot 10^{-4}$ a.u. for Orionids 1400 years ago and $5 \cdot 10^{-4}$ a.u. for η-Aquarids 3450 years ago. The minimal distances between streams and comet orbits occure [sic] in the vicinity of their perihelia."

141

Babadzhanov, Pulat B., A. F. Zausaev, *and* I͡U. V. Obrubov. Issledovanie vozmozhnoĭ svi͡azi meteornykh roev s kometami. *In* Akademii͡a nauk Tadzhikskoĭ SSR. Institut astrofiziki. Bi͡ulleten. no. 69/70. Dushanbe, Izd-vo Donish, 1980. p. 45–[53] illus. DN-Ob

References (14): p. [53]

Includes analysis of the relation of the Draconid shower with Comet Giacobini-Zinner and the η-Aquarid shower with Comet Halley.

142
Babcock, N. P. The approaching comet. New York American, Apr. 14, 1910: 20. N&CPR
Poem.

143
Babinet, Jacques. Les comètes du dix-neuvième siècle. Revue des deux mondes, 23. année, t. 4, 15 nov. 1853: 827–833. AP20.R3, s. 7, v. 4
A paper, chiefly about Halley's Comet, presented Oct. 25, 1853, at the annual public meeting of the five academies of the Institut de France.
Also published as "Sur les comètes du XIX^{e} siècle" in *L'Institut*, 1. section, 21. année, 21 déc. 1853, p. 429–435 (Q2.I5, v. 21).

144
Backhouse, Thomas W. [Observations of Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 20, June 1910: 505–506. QB1.B75, v. 20
Made May 23–June 2 at Torquay.

145
Badcock, Hugh D. Observations [of Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 21, Oct. 1910: 54–55. QB1.B75, v. 21
Made at Suva, Fiji, Apr. 18–June 2.

146
Baev, Konstantin L. K voprosu o vozmozhnom prokhozhdenīi zemli cherez khvost komety Galle͡ia. *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg*. Izv͡iestīi͡a, vyp. 18, mai, okt. 1912: 121–133, 208–220. plate. QB1.R9, v. 18

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On the Soviet space missions to Venus and Halley's Comet.

148
Bailey, S. C. Halley's Comet. English mechanic and world of science, v. 91, June 3, 17, 1910: 399, 451. illus. T1.E5, v. 91
Letters to the editor accompanying sketches, the first showing the comet as seen with the naked eye at 9:30 p.m. May 22 from Ewell, Surrey, and the second showing the comet's course May 22–June 3.

149
Bailey, Solon I. The return of Halley's Comet. Science, n.s., v. 27, Mar. 27, 1908: 512–513. Q1.S35, n.s., v. 27
Reprinted in *Scientific American Supplement*, v. 65, Apr. 11, 1908, p. 239 (T1.S52, v. 65).

150
Baillaud, Benjamin. Les comètes. Revue scientifique, 48. année, 14 mai 1910: 609–617. Q2.R53, v. 48

"Conférence faite pour la *Revue Scientifique* et la *Revue politique et littéraire*, le 12 mars 1910."

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151

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From photographs taken May 30, May 31, and June 2, the authors conclude that the nucleus underwent a profound disturbance on the last two days of May.

152

Baillaud, Jules, *and* Georges Demetresco. Observations photographiques de la comète de Halley à l'observatoire de Paris. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 30 mai 1910: 1409–1410.
Q46.A14, v. 150

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Q46.A142, v. 5

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At head of title: Observatoire de Paris. Section d'astrophysique de Meudon.

Includes data for 30 returns of Halley's Comet (from 467 B.C. on). Reference to a published source is provided for each entry. There is also a table showing the span of dates during which each comet was observed, as well as a list of returns of periodic comets.

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Baldet, Fernand. Recherches sur la constitution des comètes et sur les spectres du carbone. Orleans, Impr. H. Tessier, 1926. 109 p. illus., plates.

(Annales de l'Observatoire d'astronomie physique de Paris sis Parc de Meudon, t. 7) QB4.P27, v. 7
"Index bibliographique des observations spectrales": p. 64–71.
"La comète de Halley (1909 c)": p. 28–31.

157
Baldwin, Joseph M. Observations of Halley's Comet made at the Melbourne Observatory. Astronomische Nachrichten, Bd. 222, Nr. 5320, 9. Sept. 1924: columns 269–272. QB1.A77, v. 222
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158
Ball, *Sir* Robert S. The great comet of Halley. *In his* Star-land; being talks with young people about the wonders of the heavens. New and rev. ed. Boston, Ginn, 1899. p. 263–267. QB51.B2 1899

159
Ball, *Sir* Robert S. Halley's Comet 1910. *In his* A popular guide to the heavens; a series of eighty-six plates with explanatory text and index. 4th ed., completely rev. and edited by the Rev. T. E. R. Phillips. London, G. Philip [1925] p. 23. plates. QB65.B2 1925
The frontispiece includes a beautiful drawing of the comet as seen from Walberswick, Suffolk, on May 23, 1910, by T. E. Key; plate 19a reproduces a photograph taken by Barnard on May 4.

160
[Ball, *Sir* Robert S.] The orbit of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 71, Feb. 1911: 320–323. QB1.R7, v. 71
Discusses the method by which Cowell and Crommelin calculated the path and date of perihelion passage of the comet during its 1910 return. Part of the annual report of the Society's council.

161
Ball, W. Halley's Comet. English mechanic and world of science, v. 91, June 17, July 1, 1910: 450, 497. illus. T1.E5, v. 91
Letters to the editor accompanying sketches, the first showing the comet as seen at 5:15 a.m. Apr. 20 from Echuca, Victoria, Australia, and the second showing the comet, the moon, and Venus on May 8.

162
Balla, Károly. Halley' üstököséről. Az Időjárás, 14. évf., 1910. márc.: 106. DAS

163
Balsiger, H., *and others.* The Giotto ion mass spectrometer. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 93–98. illus.
NASA accession no. N82–14118.
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Balsiger, H., F. Bühler, J. Geiss, Marcia Neugebauer, R. Schwenn, *and* Edward G. Shelley. Das Ionenmassenspektrometer für die ESA-Mission 'GIOTTO' zum Kometen Halley. Helvetica physica acta, v. 55, no. 2, 1982: 228–229.
QC1.H4, v. 55

Abstract of a paper presented at the spring 1982 meeting of the Schweizerische physikalische Gesellschaft.

165

Bamler, Karl. Ballonfahrten zur Kometenbeobachtung. Deutsche Zeitschrift für Luftschiffahrt, 14. Jahrg., 1. Juni 1910: 21. TL503.D4, v. 14

Of nine balloons launched by the Niederrheinischer Verein für Luftschiffahrt on the evening of May 18 despite stormy weather, the occupants of only one succeeded in viewing the anticipated glimmer of the comet's tail.

166

Banachiewicz, Tadeusz. Kometa Halleya w Talmudzie. Wszechświat, t. 29, 1910: 346–347.

167

Barber, T. W. Halley's Comet. English mechanic and world of science, v. 91, June 24, 1910: 475. illus. T1.E5, v. 91

Letter to the editor accompanying a sketch of the comet as seen at Dunkma, Gold Coast Colony, at 7:30 p.m. May 23.

168

Bardeloni, Cesare. Influenze elettromagnetiche della cometa di Halley. Rivista di artigliera e genio, 27 annata, luglio/ag. 1910: 190–192.
U4.R6, 1910

169

Barker, John T. Halley's Comet. London literary gazette, Aug. 8, 1835: 506–507. AP4.L42, 1835

Reprinted in the *Museum of Foreign Literature, Science, and Art*, v. 27, Oct. 1835, p. 435–437 (AP2.M89, v. 27).

170

Barker, John T. Halley's Comet. London literary gazette, Aug. 29, 1835: 556. AP4.L42, 1835

Notes that the comet was first seen at Rome on the 5th and since then in England; indicates its probable appearance during the rest of the year. A note entitled "The Comet," on p. 558 of the same issue, states that Sir James South and Dr. Hussey were the first to see it in England.

171

Barker, Thomas, *of Lyndon*. An account of the discoveries concerning comets, with the way to find their orbits, and some improvements in constructing and calculating their places. For which reason are here added new tables, fitted to those purposes; particularly with regard to that comet which is soon expected to return. London, Printed for J. Whiston and B. White, MDCCLVII. 52, [2] p. fold. plate.

Held by the British Library under shelfmark 8560. e. 15. (3.).

Table 8 (p. 51) includes figures for calculating the angle from perihelion and distance from the sun for the comet of 1682.

Table 11 (p. 52) is entitled "Apparent Motion of the Comet of 1682, at its Next Return, Whatever Month of the Year its Perihelion Happens in."

Table 12 (p. [53]) is entitled "Place Where the Comet of 1682 May Be First Expected To Appear any Month." Where to look for the 1682 comet is also discussed on p. 23–24.

The plate includes an orbit diagram for the 1682 comet in the vicinity of the earth's orbit.

172

Barker, Thomas, *of Lyndon*. Extract of a letter of Thomas Barker, Esq; to the Reverend James Bradley, D.D. Astronomer Royal, and F.R.S. concerning the return of the comet, expected in 1757, or 1758. *In* Royal Society of London. Philosophical transactions. v. 49, pt. 1; 1755. London, Printed for L. Davis and C. Reymers, Printers to the Royal Society, against Gray's-Inn Gate, in Holbourn, M.DCC.LVI. p. 347–350. fold. plate.

Q41.L8, v. 49.1 Rare Bk. Coll.

Read Mar. 20, 1755.

173

Barlow, Edward W. [Halley's Comet] English mechanic and world of science, v. 90, Dec. 10, 31, 1909: 445, 515; v. 91, June 17, 1910: 451–452.

T1.E5, v. 90–91

Letters to the editor reporting observations made at Bournemouth, Nov. 30, Dec. 1, and Dec. 3; Dec. 6, 8, 14, and 18; and May 23–26, May 28, and June 2–3.

174

Barnard, Edward E. Additional observations of Halley's Comet. Astronomical journal, v. 26, Jan. 11, 1910: 62.

QB1.A3, v. 26

Observations made Dec. 5–21 with the 40-inch refractor of the Yerkes Observatory.

175

Barnard, Edward E. [List of plates made during the search for Halley's Comet] Astronomische Nachrichten, Bd. 189, Nr. 4522, 5. Sept. 1911: column 194.

QB1.A77, v. 189

Photographs taken during the period Sept. 25, 1908 – Mar. 17, 1909.

176

Barnard, Edward E. Micrometer positions of Halley's Comet, made with the 40-inch telescope of the Yerkes Observatory. Astronomical journal, v. 27, Dec. 1912: 147–152.

QB1.A3, v. 27

Observations made May 29, 1910 – May 23, 1911.

177

Barnard, Edward E. Note on the southern tail of Halley's Comet seen May 17 and 18, 1910. Astrophysical journal, v. 46, July 1917: 83–84.

QB1.A9, v. 46

178

Barnard, Edward E. Notes on the appearance of Halley's Comet. Popular astronomy, v. 18, Feb. 1910: 113–114. QB1.P8, v. 18

Comments on observations made Sept. 17–Nov. 30, 1909. A correction appears in the March issue, p. 191.

179

Barnard, Edward E. Observations of Halley's Comet. Astronomische Nachrichten, Bd. 188, Nr. 4500, 23. Mai 1911: columns 215–216. QB1.A77, v. 188

A brief note of observations made Apr. 16, 23, and 25. See also his notes reporting observations on Jan. 8, Mar. 19, and Apr. 1, in Bd. 187, Nr. 4476, 27. Feb., columns 189–190, and Bd. 188, Nr. 4492, 15. Apr., columns 61–62, and Nr. 4495, 5. Mai, columns 117–118, respectively.

180

Barnard, Edward E. Observations of Halley's Comet and notes on its photographic appearance. Astronomical journal, v. 26, Feb. 21, 1910: 76–77. QB1.A3, v. 26

Observations made Dec. 28–Feb. 1 at the Yerkes Observatory.

181

Barnard, Edward E. Observations of Halley's Comet at the time of its nearest approach to the earth. Astronomische Nachrichten, Bd. 185, Nr. 4431, 4. Aug. 1910: columns 229–234. plate. QB1.A77, v. 185

The plate reproduces drawings of the tail as it appeared on May 17 and 18.

182

Barnard, Edward E. On the acceleration of the receding masses in the tail of Halley's Comet, June 6, 1910. *In* American Astronomical Society. Publications. v. 2. [Ann Arbor, Mich.] 1915. p. 17. QB1.A27, v. 2

Abstract of a paper presented at the 11th meeting of the Astronomical and Astrophysical Society of America, Aug. 17–19, 1910, in Cambridge, Massachusetts. A somewhat longer version was published in *Astronomische Nachrichten*, Bd. 186, Nr. 4441, 16. Sept. 1910, columns 11–12 (QB1.A77, v. 186), and a shorter summary, entitled "On the Motion of the Particles in the Tail of Halley's Comet on June 6, 1910," in *Science*, new ser., v. 32, Dec. 16, 1910, p. 877 (Q1.S35, n.s., v. 32).

183

Barnard, Edward E. Photographic observations of Halley's Comet. Popular astronomy, v. 18, June/July 1910: 321–322. plate. QB1.P8, v. 18

Skies cleared for a few days in early May, at which time good photographs were secured at Yerkes Observatory. The plate reproduces one of these.

184

Barnard, Edward E. Preliminary report on the photographs of Halley's Comet taken at Honolulu, H.I., by Ferdinand Ellerman in 1910. Science, new ser., v. 34, Oct. 20, 1911: 531. Q1.S35, n.s., v. 34

Abstract of a paper presented at the 12th meeting of the Astronomical and Astrophysical Society of America, Aug. 23–25, 1911, in Ottawa. Reprinted in the Society's *Publications*, v. 2, p. 66–67 (QB1.A25, v. 2).

185
Barnard, Edward E. Suggestions in respect to photographing comets with special reference to Halley's Comet. Popular astronomy, v. 17, Dec. 1909: 597–609. QB1.P8, v. 17

186
Barnard, Edward E. The tail of Halley's Comet. Popular astronomy, v. 18, Mar. 1910: 182. QB1.P8, v. 18

Short extract from a letter giving measurements of the diameter of the head and the length of the tail, based on photographs taken Feb. 3 and 10.

187
Barnard, Edward E. Visual observations of Halley's Comet in 1910. Astrophysical journal, v. 39, June 1914: 373–404. illus., plates. QB1.A9, v. 39

Contents: Halley's Comet from a popular point of view.—Possible encounter of the earth with the tail of the comet.—The comet with the large telescope.—Velocity of the particles of the tail.—The return of the comet and its early appearance in the large telescope.—Naked-eye and telescopic observations.—The naked-eye and telescopic nucleus.—Greatest visible length of the tail.

The next-last and longest section consists largely of notes of observations made Apr. 11–June 27.

188
Barnard, Edward E. Visual observations of Halley's Comet, made with the 40-inch refractor of the Yerkes Observatory. Astronomical journal, v. 26, Dec. 22, 1909: 43–44. QB1.A3, v. 26

Observations were made Sept. 17–Nov. 30.

189
Barnes, Willis L. Halley's Comet. Popular astronomy, v. 18, Feb. 1910: 116. QB1.P8, v. 18

Reports observing the comet on Dec. 4 and 5 with a 4½-inch refractor.

190
Barnett, William. [Halley's Comet] English mechanic and world of science, v. 91, May 20, June 17, 1910: 356–357, 450–451. illus. T1.E5, v. 91

Letters to the editor describing observations made Apr. 19 and Apr. 20–May 13 at Rosario, Argentina. Accompanying the second letter are sketches showing the comet's appearance on May 4 and 6.

A report from this observer also appears in the British Astronomical Association's *Journal*, v. 20, June 1910, p. 502 (QB1.B75, v. 20).

191
Baroni, Isidoro G. La cometa di Halley. Emporium, v. 31, mar. 1910: 223–229. illus., ports. AP37.E5, v. 31

Forms the last third of part one of a two part article entitled "Note scientifiche: le comete. Storia—fantasia—realtà."

192
Baroni, Isidoro G. La cometa di Halley e l'investimento caudale del 19 maggio. La Lettura, anno 10, magg. 1910: 439–447. illus., ports.
AP37.L4, v. 10

193
Baroni, Isidoro G. La fine del mondo, 19 maggio, ore 3,52. Milano, "L'Attualità," 1910. 16 p.

Copies are ascribed to the Biblioteca Nazionale Centrale, Florence, and the Biblioteca Nazionale, Milan.

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Barrett, Anthony A. Observations of comets in Greek and Roman sources before A.D. 410. *In* Royal Astronomical Society of Canada. Journal, v. 72, Apr. 1978: 81–106. QB1.R485, v. 72

An introductory essay is followed by a table giving datable extracts from Greek and Latin sources (with English translations). The comets of 467, 163, and 87 B.C., and A.D. 141 and 218 are identified as possible appearances of Halley's Comet. The comet of 12 B.C. is included but not so identified.

195
Bartolini, Giovanni. Breve discorso intorno alla cometa apparsa l'anno passato 1607. *In his* Discorso astrologico delle mvtationi de' tempi dell'anno 1608. Et della nova cometa, & altre cose, come nella tauola si può vedere. In Venetia, Appresso G. Perchacino, M D C VIII. p. [7]–[11]

Held by the British Library under shelfmark 718. f. 38. (1.).

196
Barton, Samuel G. Halley's Comet. *In* Thomas S. Clarkson Memorial College of Technology, *Potsdam, N.Y.* Clarkson bulletin, v. 7, Jan. 1910: 29–47. illus., plate. T171.C5, v. 7
——— ——— Offprint. [Potsdam, N.Y., 1910] 23 p. illus., plate.
QB723.H2B2

197
Baruffi, Giuseppe F. Cenni sulla cometa d'Halley e sul grande eclisse solare del 15 maggio 1836; lettera di G. F. Baruffi agli uranofili torinesi. Torino, Coi tipi di G. Pomba, 1836. 32 p.

Item 753 in the *Catalogue alphabétique*, t. 1 (Bruxelles, Hayez, 1910. Z5156.B92, v. 1), of the Bibliothèque de l'Observatoire royal de Belgique.

198
Baruffi, Giuseppe F. Della imminente apparizione della gran cometa d'Halley; lettera del professore G. F. Baruffi, professore straordinario di filosofia nella r. università di Torino, al signor conte Cesare della Chiesa di Benevello. Corredata di nuova carta cometografica. Torino, Dalla Stamperia reale, 1835. 44 p. illus.

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199
Bassot, Jean Antonin Léon. Sur la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 7 nov. 1910: 789. Q46.A14, v. 151

Observations made at Nice, Nov. 2–3.

200
Batchelor, John C. The further adventures of Halley's Comet. New York, Congdon & Lattès, 1980. 508 p. illus. PZ4.B3279 Fu

A novel.

Reviewed by Gilbert Sorrentino in the *Washington Post Book World*, Feb. 1, 1981, p. 9 (N&CPR).

201
Battermann, Hans F. H. Beobachtungen des Halleyschen Kometen 1909 c am 32.5 cm-Refraktor der Sternwarte Königsberg (Vergr. 120). Astronomische Nachrichten, Bd. 187. Nr. 4466, 19. Jan. 1911: columns 27–30. QB1.A77, v. 187

Observations made Mar. 3–June 9, 1910.

202
Baum, Ludwig. Wiederentdeckung des Kometen Halley (1982i). Sterne und Weltraum, 21. Jahrg., Dez. 1982: 500. illus. QB1.S854, v. 21

203
Baumer, Lewis. Burglar (with sudden enthusiasm for astronomy). Punch, v. 138, June 1, 1910: 403. illus. AP101.P8, v. 138

Cartoon. Impudent second-story man, confronted as he clings to drainpipe by an angry old gentleman leaning out of a window and brandishing a pistol, says, "'Scuse me, Guv'ner, can you tell me where I can get a view of this 'ere comet?"

204
Beattie, Ernest H. [Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 21, Nov. 1910: 123. QB1.B75, v. 21

Reports observations made during May at Mosman, near Sydney, N.S.W.

205
Beattie, Ernest H. Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 21, Mar. 1911: 269–271. QB1.B75, v. 21

Letter to the editor describing some phenomena that may have been caused by the earth's passage through the comet's tail.

206
Beck, Joan. A dim-out for Halley's comet? Chicago tribune, May 11, 1982: 14. N&CPR

On Fred Schaaf's proposal to lower the lights when the comet's visibility is at its best.

207
Beck, Joan. Will we snub a cosmic visitor? Chicago tribune, Aug. 3, 1981: 22. N&CPR

208
Bedellus, Johannes. Verba. (Tafel der Jahreszeichen für 1457–1552.) [Bamberg, J. Pfeyl, ca. 1495] broadside (1 p.)

GW 3759. The *Gesamtkatalog der Wiegendrucke* ascribes a defective copy (lacking the lower part of the sheet) to the Bayerische Staatsbibliothek in Munich. A German version ([Nürnberg] C. Höchfelder, 1498) was also issued (GW 3760).

According to *600 Jahre Astronomie in Nürnberg* (Nürnberg, Verlag H. Carl, 1977), by Kurt Pilz, these broadsides mention the 1456 appearance of Halley's Comet.

209
Bedenkingen over den komeet of staartster, waar van de wederkomst eerlang verwagt wordt. Uitgezogte verhandelingen uit de nieuwste werken van de societeiten der wetenschappen in Europa, 2. deel, 7. stukje, 1757: 492–506. Q4.U3, v. 2

Signed H.

210
Beets, Nicolaas. De student Nicolaas Beets ziet de komeet Halley. Hemel en dampkring, 56. jaarg., nov. 1958: 205. QB1.N43, v. 56

An extract, dated 16 oct. 1835, from a diary published in 1956.

211
Bekker, Balthasar. Ondersoek van de betekeninge der kometen, by gelegentheid van de genen die in de jaren 1680. 1681. en 1682. geschenen hebben. Te Leuwarden, Gedrukt bij Hero Nauta, Boekverkoper voor aan in de Peperstaaat [sic] 1683. 165 p.

Held by the British Library under shelfmark 531. e. 45.

The comet of 1682 is briefly mentioned in chapters 6, 7, and 10.

212
Beli͡aev, N. A. Vozvrashchenie komety Gallei͡a. Zemli͡a i vselennai͡a, i͡anv./febr. 1983: 30–31. illus. QB1.Z47, 1983

Includes an ephemeris for Jan. 5, 1985 – Dec. 26, 1986.

213
Beli͡avskiĭ, Sergeĭ I. Photographische Aufnahmen des Kometen Halley in Simeïs. 2. Mitteilung. *In* Pulkovo. Glavnai͡a astronomicheskai͡a observatorii͡a. Izvi͡estii͡a. t. 5; 1912. S.-Peterburg, Tip. Imperatorskoĭ Akademii Nauk, 1912. p. 39–45. DN-Ob

A table gives positions of the comet as determined from photographs taken Dec. 5, 1909 – June 15, 1910.

214
Beli͡avskiĭ, Sergeĭ I. Vorläufige Mitteilungen über die Beobachtungen des Halley'schen Kometen in Simeïs. *In* Pulkovo. Glavnai͡a astronomicheskai͡a observatorii͡a. Izvi͡estii͡a. t. 4; 1910/12. S.-Peterburg, Tip. Imperatorskoĭ Akademii Nauk, 1912. p. 1–13. plates. QB4.P982, v. 4

215
Bellamy, Frank A. Halley's Comet. Knowledge, new ser., v. 8, Jan. 1911: 23.
Q1.K7, n.s., v. 8

News note, including Seagrave's ephemeris for Jan. 3–Apr. 1, 1911.

216
Bellus, Dan. Operation Halley's Comet. Mercury, v. 3, Mar./June 1974: 15.
QB1.M43, v. 3

Humorous sketch illustrating how information is warped during transmission by word of mouth.

A version by Neal Schulz, set in a school rather than an army background, appears under the title "A Communication About Haley's [sic] Comet—1985" in *Physics Teacher*, v. 20, Feb. 1982, p. 117 (QC30.P48, v. 20).

216a
Belton, Michael J. S. Comet P/Halley in 1982/83. *In* American Astronomical Society. Bulletin, v. 15, no. 3, 1983: 804. QB1.A255, v. 15

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 16–20, 1983, at Ithaca, New York.

217
Belton, Michael J. S. The hairy stars. *In* Science year; the World book science annual. 1983. Chicago, World Book [1982] p. [58]–69. illus. (part col.)
Q9.S33 1983

"Astronomers anticipating the return of Halley's Comet are mounting a worldwide effort to learn more of the secrets of this special family of celestial objects." Much of the article deals with the search for, and plans to observe, Halley's Comet during its forthcoming return.

218
Belton, Michael J. S. The impact of the Halley/Tempel 2 mission on cometary physics. *In* Workshop on Cometary Missions, *Bamberg, 1979*. Cometary missions; proceedings. [Edited by] W. I. Axford, H. Fechtig, J. Rahe. Bamberg, 1979. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 132) p. 211–223. DN-Ob

"Synopsis of an impromptu talk which covered the following topics: Why Fly a Mission to a Comet?; The Concept of a Program of Cometary Missions; The Impact of a Mission on Cometary Physics; Important Components of a Comet Mission; How to Pronounce Halley/How to Spell Tempel; and finally some scientific questions which require quick answers."

219
Belton, Michael J. S., *and* John C. Brandt. Interplanetary gas. XII. A catalogue of comet-tail orientations. Chicago, University of Chicago Press, 1966. 125–331 p. (Astrophysical journal. Supplement series, v. 13, no. 117)
QB1.A88, v. 13

"Some 1600 observations of the position angle of comet tails, including both original and published measurements, are reduced to orientations in the plane of the orbit of the comet. Measured and computed quantities are given together in the tabulation. Also given are the vectors which describe the geometrical circumstances at the time of observation."

"Comet P/Halley 1909C": p. 148–151, 230–236, 325, 328.

220

Belton, Michael J. S., *and* Harvey Butcher. Limits on the nucleus of Halley's Comet. Nature, v. 298, July 15, 1982: 249–251. illus. Q1.N2, v. 298

References (9): p. 251.

"We report here a limiting magnitude to the brightness of the nucleus of Halley's Comet which, together with published interpretations of the comet's visual light curve in 1910 and estimates of the magnitude of non-gravitational forces that have modified the comet's orbital motion throughout the past five apparitions, places some interesting limits on the physical properties of the nucleus. We find that the nucleus is probably ~4 km across, has a surface albedo of 0.17, and a mass of 3.4 x 10^{16} g. Comet Halley may not be recovered until early November 1984, but could be found as early as late September-early October 1982."

221

Belton, Michael J. S. Limits on the nucleus of Halley's Comet. *In* American Astronomical Society. Bulletin, v. 14, no. 3, 1982: 752. QB1.A255, v. 14

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 19–22, 1982, in Boulder, Colorado.

222

Bemporad, Azeglio. Misure fotometriche del nucleo della cometa di Halley, eseguite nel R. Osservatorio di Catania. *In* Società degli spettroscopisti italiani. Memorie di astrofisica ed astronomia, v. 40, ott.–nov. 1911: 163–174, 193–203. illus. QB1.S58, v. 40

Bibliographic footnotes.

Includes a table with details of the observations carried out Apr. 19–July 9, 1910. There is also a graph comparing observed with calculated magnitudes.

A preliminary version appeared under the same title in *Astronomische Nachrichten*, Bd. 187, Nr. 4465, 12. Jan. 1911, columns 1–8 (QB1.A77, v. 187).

223

Benvenuti, Piero. Dust emission structure in comets with type II tails. Astrophysics and space science, v. 27, Mar. 1974: 203–209. illus. QB460.A876, v. 27

References (3): p. 209.

"Short exposure plates of Comet Arend-Roland (1956h) are examined and compared with similar photographs of Comet Bennett (1969i), Comet Halley (1910 II), and Comet Mrkos (1957d). It is found that the emission structure of the dust near the nucleus in the first comet is different from that in the others, although in all cases we have the formation of parabolic envelopes. Close resemblances with configurations described by Wurm and Mammano (1972) have been found for Comet Halley and Comet Mrkos."

224

Beobachtungen betreffend den Durchgang der Erde durch den Schweif des Halleyschen Kometen. Astronomische Nachrichten, Bd. 185, Nr. 4418, 9. Juni 1910: columns 31–32. QB1.A77, v. 185

Reports from H. Knox-Shaw (in English) in Helwan, Bruno Meyermann in Tsingtao, and Karl Bohlin in Stockholm.

225

Beobachtungen des Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4414, 27. Mai 1910: columns 369–370. QB1.A77, v. 184

Brief reports from Carl F. Pechüle, H. Battermann, and W. W. Campbell of observations made at Copenhagen (May 21–22), Königsberg (May 20), and the Lick Observatory (May 20).

226

Beobachtungen des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 182, Nr. 4361, 7. Okt. 1909: columns 285–286.

QB1.A77, v. 182

Positions from observations made at the Yerkes Observatory, Sept. 15, 17, and 24, and a photograph taken by Wolf at Königstuhl on Sept. 15.

227

Beobachtungen des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 184, Nr. 4408, 2. Mai 1910: columns 269–270.

QB1.A77, v. 184

Reports from A. Abetti, Holger Thiele, Joseph Sykora, and J. Franz of observations made at Arcetri (Apr. 20), Bergedorf (Apr. 22), Tashkend (Feb. 28–Mar. 2), and Breslau (Apr. 17 and 23).

228

Beobachtungen des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 184, Nr. 4410, 11. Mai 1910: columns 303–304.

QB1.A77, v. 184

Reports from J. Franz, Robert P. S. Vogel, and Carl F. Pechüle of observations made at Breslau (Jan. 1), Kiev (Jan. 8), and Copenhagen (Apr. 25 and 27), respectively.

229

Beobachtungen des Halleyschen Kometen von Seiten des Astrophysikalischen Observatoriums bei Potsdam. Astronomische Nachrichten, Bd. 185, Nr. 4425, 8. Juli 1910: columns 135–140. QB1.A77, v. 185

Contributions by Gustav Müller (describing observations made on Tenerife at altitudes of 2000 and 3300 m), Wilhelm Münch, Baron von der Pahlen, and Karl Schwarzschild; brief reports from Königsberg (Hans Battermann), Tsingtao (Bruno Meyermann), and Santiago de Chile (Friedrich W. Ristenpart) are appended.

230

Beobachtungen und Mitteilungen vom Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4415/4416, 1. Juni 1910: columns 399–404. illus. QB1.A77, v. 184

Observational data (May 23–25) from Carl F. Pechüle at Copenhagen; reports of observations at Bamberg (May 12–17) from Ernst Hartwig and at Teramo (May 18) from V. Cerulli; a telegram reporting an observation (May 31) at Barcelona from Comas Solá; and two reports from Wolf at Heidelberg, one describing observations made May 10, 12, 15, and 17, accompanied by a sketch showing the position of the comet's tail on May 12, and the other adding to his note in an earlier issue (see item 2095) on atmospheric phenomena during the period of the comet's nearest approach to the earth.

231

Beobachtungen und Mitteilungen vom Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 184, Nr. 4412/4413, 19. Mai 1910: columns 349–352. QB1.A77, v. 184

Brief reports from Leo Courvoisier at Berlin, C. F. Pechüle at Copenhagen, Ernst Hartwig at Bamberg, W. W. Campbell at the Lick Observatory, Weinek at Prague, A. Tass at Ó-Gyalla, J. Franz at Breslau, W. Ceraski at Moscow, and T. Banachiewicz at Warsaw. Kobold provides information from Harvard Bulletin 403 and a correction to Lick Observatory Bulletin 179.

A correction to the Bamberg observation reported in columns 349–350 appears in Bd. 186, Nr. 4446, 15. Okt. 1910, columns 95–96.

232

Berberich, Adolf. [Der Halleysche Komet] Naturwissenschaftliche Rundschau, 24. Jahrg., 23.–30. Sept., 11., 25. Nov., 9. Dez. 1909: 492, 504, 584, 608, 636; 25. Jahrg., 6.–13., 27. Jan., 24. Feb., 3., 17.–31. März, 21. Apr., 5., 19. Mai, 2.–23. Juni, 14. Juli, 18. Aug., 8.–15., 29. Sept., 6.–13. Okt., 10. Nov., 8.–15. Dez. 1910: 16, 28, 52, 104, 120, 144, 156, 168, 208, 236, 260, 288, 300, 312, 324, 364, 428, 468, 480, 504, 520, 532, 584, 636, 648; 26. Jahrg., 8. Juni 1911: 300. Q3.N8, v. 25–26

LC lacks 24. Jahrg.

News notes covering a variety of topics; some include ephemerides. See also the photograph, taken Apr. 21, 1910, at Johannesburg, reproduced in the 3. Nov. 1910 issue, p. 557.

233

Berberich, Adolf. Der Halleysche Komet und seine bevorstehende Wiederkehr. Naturwissenschaftliche Rundschau, 24. Jahrg., 7. Jan. 1909: 1–4.

234

Berganzo, Luis A. Al cometa de Halley, para la Sociedad Astronómica de México. *In* Sociedad Astronómica de México. Boletín mensual, t. 9, enero de 1910: 19–22. QB1.S55, v. 9

Poem.

235

Bergstralh, Jay T. Near-perihelion observations of Comet Halley from shuttle orbiter. *In* Modern observational techniques for comets; proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. Pasadena, Calif., National Aeronautics and Space

Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. (JPL publication 81–68) p. 240–248. illus.
DN-Ob

References (3): p. 243.

"A cometary instrument package of modest size could be assembled to share space in the Shuttle cargo bay with other payloads; this approach should be economical enough to permit scheduling such a package for several flights during Halley's apparition, and thus partially fill the observational gaps left by ST and the intercept missions."

236

Berlingett, Alice. To Halley's Comet. Popular astronomy, v. 27, May 1919: 338.
QB1.P8, v. 27

Poem.

237

Bernard, Adrien, *and* Pierre Idrac. Deuxième série de recherches sur la comète de Halley et son spectre à l'observatoire de Meudon. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 150, 9 mai 1910: 1161–1164.
Q46.A14, v. 150

Observations made during the period Jan. 7–May 7.

238

Bernardo, Ant. Le comete in generale e quella di Halley in particolare; conferenza letta il giorno 8 maggio 1910 nel Circolo artistico di Catania. Catania, Tip. Moderna, 1910. 28 p.

239

Berry, Richard. A commitment to space. Astronomy, v. 9, July 1981: 37.
QB1.A7998, v. 9

The editor of *Astronomy* exhorts readers to contribute to the Halley Fund.

240

Bertaud, Charles, *and* Edgard Stram. La comète de Halley à son retour de 1835. L'Astronomie, v. 96, oct. 1982: 455–469. illus.
DN-Ob

References (14): p. 469.

241

Berthoud, Paul. La comète de Halley vue de Rikatla en mai 1910. Notes et dessins. *In* Société neuchâteloise de géographie. Bulletin. t. 20; 1909/10. Neuchâtel, Impr. Attinger frères, 1910. p. [416]–429. illus.
G29.S7, v. 20

242

Bertsch, Balthasar. Kurtze Beschreibung [des Kometen von 1607] Koburg, C. Bertsch, 1607. 4 leaves.

Zinner 4126a.

243

Beskrifning om dhen sidst i augusti monat innevarande åhr 1682. synte stoore och förskräckelige cometen, med een eenfaldige astronomien liikmåtig doch oförgripelige meening om des effter sig dragande wärkan och betydelse. [n.p., 1682] [4] p.

Isak Collijn, in his *Sveriges bibliografi, 1600-talet* (Uppsala, Svenska litteratursällskapet [1942]), ascribes copies to Stadsbiblioteket, Göteborg; Kungliga Biblioteket, Stockholm; and Universitetsbiblioteket, Uppsala.

244

Bessel, Friedrich W. Auszug aus drei Schreiben des Herrn Geheimenraths Bessel an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 289, 17. Oct. 1835: columns 9–10. QB1.A77, v. 13

Corrects one of the reductions appearing in column 3 of this issue, gives reductions of observations made Sept. 14–26, and notes that although he observed the comet on Sept. 21, his comparison star was of uncertain location.

245

Bessel, Friedrich W. Auszug aus einem Schreiben des Herrn Geheimenraths und Ritters Bessel an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 293, 28. Nov. 1835: columns 65–68. QB1.A77, v. 13

Furnishes data on observations made during the period Sept. 27–Oct. 22, discusses the comet's appearance, and gives his result for the time of perihelion passage.

246

Bessel, Friedrich W. Bemerkungen über mögliche Unzulänglichkeit der die Anziehungen allein berücksichtigenden Theorie der Kometen. Astronomische Nachrichten, Bd. 13, Nr. 310, 11. Juni 1836: columns 345–350. QB1.A77, v. 13

Basing his arguments in part on recent observations of Halley's Comet, the author suggests that since the motion of a comet may be affected by the reactive force arising when matter is driven off the nucleus, a theory of cometary motion based solely on the force of gravitational attraction may prove inadequate.

247

Bessel, Friedrich W. Beobachtungen über die physische Beschaffenheit des Halley'schen Kometen und dadurch veranlasste Bemerkungen. Astronomische Nachrichten, 13. Bd., Nr. 300/302, 20. Feb. 1836: columns 185–232. plates. QB1.A77, v. 13

The plates reproduce sketches of the comet as it appeared on Oct. 2, 8, 12 (at four different times), 13, 14, 15, 20, 22, and 25, 1835.

An extended report on this study, with translated extracts, by Alfred Gautier, appears in *Bibliothèque universelle de Genève*, t. 2, avril 1836, p. 357–365 (AP24.B5, v. 2), and an abridgment, in *Annalen der Physik und Chemie*, 38. Bd., 3. Stück, 1836, p. 498–530 (QC1.A6, v. 38).

A French translation by Émile Plantamour, entitled "Mémoire sur la constitution physique de la comète de Halley," appears in the "Additions," p. 79–118, to *Connaissance des tems . . . pour l'an 1840* (Paris, Bachelier, 1837. QB8.F9, 1840), issued by the Bureau des longitudes of France.

An English translation by Leo Kanner Associates of Redwood City, Calif., entitled *Observations Concerning the Physical Nature of Halley's Comet and Resulting Comments* (1976. 63 p. NASA accession no.

N76–18020. Sci RR), was published in Washington by the National Aeronautics and Space Administration as its NASA TT F–16726.

248

Bessel, Friedrich W. Berechnung der Harriot'schen und Torporley'schen Beobachtungen des Cometen von 1607. Monatliche Correspondenz zur Beförderung der Erd- und Himmels-Kunde, 10. Bd., Nov. 1804: 425–440.
QB1.M7, v. 10

The publication that launched the author's astronomical career.

249

Bessel, Friedrich W. [Der Halleysche Komet] *In* Prussia. Allgemeine Staats-Zeitung, 30. Aug. 1835: 983. J7.G185, 1835

Reports his observation of the comet on the 25th at Königsberg and judges from its position that it should pass perihelion between Nov. 14 and Nov. 15.

250

Bessel, Friedrich W. Schreiben des Herrn Geheimenraths und Ritters Bessel an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 315–316; 13. Bd., Nr. 289, 17. Oct.: columns 3–6.
QB1.A77, v. 12–13

Reports an observation of Aug. 25, provides reductions of observations made Aug. 25 and 28, and discusses the comet's orbit. A correction for the Aug. 28 reduction appears in Nr. 289, column 9.

251

Bessel, Friedrich W. Ueber den Halley'schen Kometen. Eine Vorlesung vor einem Kreise von Freunden, im Jahr 1834, gehalten. *In* Schumacher, Heinrich C. Jahrbuch für 1836. Stuttgart, Verlag der J. G. Cotta'schen Buchhandlung, 1836. p. 48–73. QB8.G56, 1836

Reprinted in his *Populäre Vorlesungen über wissenschaftliche Gegenstände*, p. [94]–120 (Hamburg, Perthes-Besser & Mauke, 1848).

252

Bessel, Friedrich W. Von den Erscheinungen, welche der Halley'sche Comet gezeigt hat. *In* Schumacher, Heinrich C. Jahrbuch für 1837. Stuttgart, Verlag der J. G. Cotta'schen Buchhandlung, 1837. p. [142]–175. fold. plate. QB8.G56, 1837

Presented Jan. 29, 1836, at a meeting of the Physicalisch-oeconomische Gesellschaft of Königsberg.

Reprinted in his *Populäre Vorlesungen über wissenschaftliche Gegenstände*, p. [121]–157 (Hamburg, Perthes-Besser & Mauke, 1848).

An Italian translation by Guido Horn, entitled "Dei fenomeni manifestati della cometa di Halley," appears in *Rivista di astronomia e scienze affini*, anno 4, magg. 1910, p. 195–210 (QB1.S57, v. 4).

253

Betancourt, Othón. Reaparicion del cometa Halley. El Universo, año 79/80, oct. 1981/mar. 1982: 21–25; año 80, abr./jun. 1982: 18–19. illus. DN-Ob

254
Bevis, John. An account of the comet seen in May 1759. *In* Royal Society of London. Philosophical transactions. v. 51, pt. 1; 1759. London, Printed for L. Davis and C. Reymers, Printers to the Royal Society, against Gray's-Inn Gate, in Holbourn, M.DCC.LX. p. 93–94.
Q41.L8, v. 51.1 Rare Bk. Coll.

Read May 3, 1759.

Describes observations made in London on Apr. 30 and May 1 and 2.

255
Die bevorstehende Wiederkehr des Halleyschen Kometen. Sirius, 41. Bd., Aug. 1908: 175–177. DN-Ob

Includes an ephemeris, Oct. 2, 1908–Mar. 1, 1909, extracted from that published by Holetschek in the *Sitzungsberichte*, 117. Bd., Abt. IIa, Apr. 1908, of the Akademie der Wissenschaften, Vienna, Mathematisch-naturwissenschaftliche Klasse.

256
Die bevorstehende Wiederkehr des Halleyschen Kometen. Sirius, 42. Bd., März 1909: 57–58. DN-Ob

Includes an ephemeris for Mar. 8, 1909–Dec. 28, 1910, extracted from one published in *Astronomische Nachrichten*, Bd. 179, Nr. 4294/4295, 31. Dez. 1908, columns 369–372 (QB1.A77, v. 179).

256a
Beyre, *M.* de. La prédiction de Halley. Le Figaro, 56. année, 18 mai 1910: 3–4. N&CPR

257
Biagio. In attesa della fine del mondo—19 maggio. L'Illustrazione italiana, anno 37, 15 magg. 1910: inside front cover. illus. AP37.I4, v. 37

Series of cartoons illustrating the ways in which different persons are preparing for the earth's encounter with the comet.

258
Bianchi, Giuseppe. Schreiben des Herrn Bianchi, Directors der Sternwarte in Modena, an den Herausgeber. Astronomische Nachrichten, 14. Bd., Nr. 325, 327, 23. Feb., 27. Apr. 1837: columns 205–208, 243–246.
QB1.A77, v. 14

In Italian.

Chiefly details of observations (with comparison stars) of Halley's Comet during the period Sept. 22–Nov. 11, 1835.

259
Biela's and Halley's comets. Nature, v. 19, Jan. 2, 1879: 204. Q1.N2, v. 19

"There are near approximations between the orbits of these bodies not far from points which were first roughly indicated" by Littrow in an 1854 paper entitled "Bahnnähen zwischen den periodischen Gestirnen des Sonnensystemes."

260

Biermann, Ludwig, P. T. Giguere, *and* Walter F. Huebner. A model of a comet coma with interstellar molecules in the nucleus. Astronomy and astrophysics, v. 108, Apr. (II) 1982: 221–226. illus. QB1.A83, v. 108

References (34): p. 226.

"The coma of a comet is modeled assuming the icy nucleus contains interstellar molecules. This composition overcomes discrepancies between observation and earlier model predictions for CN, C_2, C_3, and NH_2 abundances. It is found that the abundances of CN, C_2, and C_3-bearing compounds in the nucleus must be constrained to trace amounts in order to account for the observed column densities. NH_3 also cannot be abundant by more than about 1%. The model gives good agreement with observed relative ranges of neutral species in the coma as well as with their observed relative intensity dependence on heliocentric distance. The size of the nucleus and the heliocentric ranges considered are relevant to comet Halley."

261

Biermann, Ludwig. Über den Schweif des Kometen Halley im Jahre 1910. Zeitschrift für Naturforschung, Bd. 7a, Jan. 1952: 127–136. plates. Q3.Z39, v. 7a

Bibliographic footnotes.

262

Bigourdan, Guillaume. [Photographies de la comète de Halley] *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 17 mai 1910: 1212–1213. Q46.A14, v. 150

In presenting, on behalf of M. Íñiguez, photographs taken at Madrid, Bigourdan briefly describes the telescopes used and tells of spectroscopic findings.

263

Bilt, Jan van der. De komeet van Halley. Amsterdam, S. L. van Looy, 1910. 34 p. illus. (Volksgeschriften der Maatschappij tot nut van 't algemeen, nr. 88)

264

Biot, Édouard C. Recherches faites dans la grande collection des historiens de la Chine, sur les anciennes apparitions de la comète de Halley. *In* France. *Bureau des longitudes*. Connaissance des temps ... pour l'an 1846. Paris, Bachelier, 1843. Additions, p. [69]–84. QB8.F9, 1846

Examining sources that were not available to Pingré, the author attempts to identify early visits of Halley's Comet. The apparitions of 1531, 1456, and 1378 are confirmed; he then proceeds backward by repeatedly subtracting 76 years and checking records for the resulting date and periods varying from 3 to 22 years on either side. By this method he includes data for some of what are now accepted as probable appearances of Halley's Comet—the apparitions of 1222, 1145, 1066, 989, 912, 837, 684, 451, and 12 B.C. Information on the comet of 1301 is included in his "Catalogue des comètes observées en Chine depuis l'an 1230 jusqu'à l'an 1640 de notre ère," on p. 46 of the "Additions" to the same volume.

265
Biot, Édouard C. Sur la direction de la queue des comètes. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 16, 10 avril 1843: 751–752. Q46.A14, v. 16

The discovery that comets' tails are, as a rule, directed away from the sun is usually credited to Fracastoro (1538) and Apian (1540). In a letter to Arago, Biot cites a passage at the end of the description in the T'ang dynasty annals of the comet of 837 (an appearance of Halley's Comet) showing that Chinese observers were aware of this at least 700 years earlier. According to Joseph Needham and Wang Ling, the Chinese had arrived at this conclusion by the 7th—and probably in the 6th—century; see footnote e, p. 432, in their *Science and Civilisation in China*, v. 3 (Cambridge, At the University Press, 1959. DS21.N39, v. 3).

266
Bird, John T. [Observations of Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 20, June 1910: 506–507. illus. QB1.B75, v. 20

Made May 17–22 at Bloemfontein. The sketch shows the comet's appearance on the morning of May 16.

See also the report of a paper on this subject given by the Rev. Mr. Bird at a meeting of the West of Scotland Branch, Apr. 3, 1913, in v. 23, Mar. 1913, p. 263–264.

267
Bird, M. K., H. Volland, H. Porsche, *and* P. Edenhofer. Bestimmung des Massenflusses und des Elektroneninhaltes der Koma um Komet Halley aus Dopplermessungen am Signal der Giotto-Raumsonde. *In* Astronomische Gesellschaft. Mitteilungen, Nr. 58, 1983: 157–162. illus. QB1.A66, no. 58

References (12): p. 162.

Presented at the combined meeting of the Arbeitsgemeinschaft für Extraterrestrische Physik and the Astronomische Gesellschaft, Mar. 22–25, 1983, in Konstanz.

268
Birkeland, Kristian. Halley's Comet, May, 1910. *In* The Norwegian aurora polaris expedition, 1902–1903. v. 1. On the cause of magnetic storms and the origin of terrestrial magnetism, by Kr. Birkeland. 2d section. Christiania, H. Aschehoug; London, New York, Longmans, Green [1913] p. 639–654. illus. QC971.B6, v. 1.2

Bibliographic footnotes.

This study "is a comparison of the available observation-material concerning Halley's comet, May, 1910, with our experimental results, and may serve to strengthen the theory that the comet's tail-material consists of electric corpuscles radiated from the comet."

269
Birkeland, Kristian. Transit of Halley's Comet across Venus and the earth in May. Nature, v. 83, Apr. 21, 1910: 217–218. illus. Q1.N2, v. 83

Announces in a letter to the editor his plans to make magnetic and atmospheric observations in the north of Norway during the period May

7–June 1, and describes his expectations in the light of his studies of the aurora borealis.

270
Bisson, P. Observations of Halley's Comet made on board s.s. "Mobile." *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 617.
QB1.R7, v. 70

Made May 7 in the North Atlantic.

271
Blamont, Jacques E. The Halley swarm. Planetary report, v. 1, Apr./May 1981: 4–5. col. illus.
QB600.P54, v. 1

About the Halley's Comet missions planned by the European Space Agency, Japan, and the Soviet Union.

272
Blathwayt, T. B. Eyesight—Halley's Comet—steadying hand telescope. English mechanic and world of science, v. 91, July 15, 1910: 545.
T1.E5, v. 91

Letter to the editor that includes a report of a long, faint streamer in the predawn sky on May 20 at Cape Town, which he concludes must have been the comet's tail.

273
Blazhko, Sergeĭ N. La kometo de Halley. El rusa lingvo esperantigis inĝ. W. Ŝmurlo. Kötzschenbroda-Dresden, H. F. A. Thalwitzer, 1910. 21 p. (Kolekto de la internacia scienca revuo, 1)

274
Blazing stars messengers of God's wrath: in a few serious and solemn meditations upon the wonderful comet: which now appears in our horizon, April, 1759: together with a solemn call to sinners, and counsel to saints; how to behave themselves when God is in this wise speaking to them from Heaven. Boston, Printed and sold by R. Draper in Newbury-street; and by Fowle & Draper in Marlborough-street, 1759. broadside (1 p.)
Rare Bk. Coll.

Positive photostat.
Broadside portfolio 35, no. 26.
Evans 8301.

275
Blencoe, David A. Variation in the period of Halley's Comet. Popular astronomy, v. 22, Mar. 1914: 191–192. illus.
QB1.P8, v. 22

Finds an apparent regularity in the return of the shortest and longest periods between successive perihelion dates.

276
Blondel, Alphonse. Observation de la comète de Halley, faite à l'observatoire de Toulouse, à l'équatorial Brunner Henry de 0^{m},38 d'ouverture. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 23 mai 1910: 1299.
Q46.A14, v. 150

Made May 8.

277

Blumhart, *Rechtsanwalt*. Das Licht des Halleyschen Kometen. Der Türmer, 12. Jahrg., Juli 1910: 570–571. AP30.T8, v. 12

Deplores the foolish behavior exhibited by even the educated classes during the passage of the comet.

278

Blythe, Minnie C. I saw Halley's Comet. Good old days, v. 18, Apr. 1982: 4–5. illus. E169.G69, v. 18

Recalls seeing the comet at the age of 13 in Grace, Idaho.

279

Boain, Ronald J., *and* Rolf C. Hastrup. A ballistic mission to fly by Comet Halley. AIAA/AAS Astrodynamics Conference, August 11–13, 1980/ Danvers, Massachusetts. New York, American Institute of Aeronautics and Astronautics [1980] 13 p. illus. (AIAA paper 80–1686) Sci RR

References (12): p. 13.

280

Boain, Ronald J. A mission design for the Halley Comet Rendezvous using ion drive. AAS/AIAA Astrodynamics Conference, Jackson, Wyoming/ September 7–9, 1977. [New York, American Institute of Aeronautics and Astronautics, 1978] 13 p. illus. (AAS paper 77–5)

AIAA accession no. A78–31938.

References (7): p. 13.

"... discusses the mission design of the Halley Comet Rendezvous and describes the ion propulsion system necessary to meet the mission objectives."

281

Bobrovnikoff, Nicholas T. Carbon isotopes in comets. *In* Astronomical Society of the Pacific. Publications, v. 42, Apr. 1930: 117–121. QB1.A4, v. 42

Bibliographic footnotes.

The analysis is based on spectrograms of comets Brooks (1911 V) and Halley.

282

Bobrovnikoff, Nicholas T. Comets. *In* Hynek, Joseph Allen, *ed.* Astrophysics. A topical symposium commemorating the fiftieth anniversary of the Yerkes Observatory and a half century of progress in astrophysics. New York, McGraw-Hill Book Co., 1951 (McGraw-Hill astronomical series) p. 302–356. illus. QB461.H9

References (39): p. 355–356.

Information on many aspects—e.g., brightness, composition, mass, orbit, tail condensations—of Halley's Comet is included (see index). Several 1910 photographs are among the illustrations.

283

Bobrovnikoff, Nicholas T. Halley's Comet in its apparition of 1909–1911. [Berkeley, Calif., University of California Press, 1931] [309]–482 p. plates. (University of California publications. Publications of the Lick Observatory, v. 17, [pt. 2]) QB4.L71, v. 17

Bibliographic footnotes.

Contents: Material and methods of measurement and plan of the investigation.—Chronological description of cometary phenomena.—The spectrum of Halley's Comet.—Description of illustrations.—General structure of the comet and discussion of results.—Summary.

Reviewed by Seth B. Nicholson in the *Publications* of the Astronomical Society of the Pacific, v. 44, Apr. 1932, p. 117–119 (QB1.A4, v. 44), by Charles P. Olivier in *Science*, new ser., v. 75, Apr. 1, 1932, p. 359–360 (Q1.S35, n.s., v. 75), and by A. C. D. Crommelin in *Nature*, v. 131, Feb. 25, 1933, p. 282 (Q1.N2, v. 131).

284

Bobrovnikoff, Nicholas T. Halley's Comet in 1910. *In* Astronomical Society of the Pacific. Publications, v. 42, Dec. 1930: 309–318. plates.
QB1.A4, v. 42

—— —— Offprint. [Delaware, Ohio? 1931?] 12 p. plates. (Ohio Wesleyan University. Perkins Observatory. Miscellaneous scientific papers, reprint no 5)
QB4.O45, no. 5

285

Bobrovnikoff, Nicholas T. Investigations of the brightness of comets. [Delaware, Ohio?] 1941–42. 2 pts. (Contributions from the Perkins Observatory, Ohio Wesleyan University and Ohio State University, no. 15–16)
QB4.O43, v. 2

"Comet 1910 II (Halley)": pt. 1, p. 47–49, 85–87, 174; pt. 2, p. 56–59.

286

Bobrovnikoff, Nicholas T. On the phenomena of halos in comets. *In* Astronomical Society of the Pacific. Publications, v. 44, Oct. 1932: 296–307.
QB1.A4, v. 44

Bibliographic footnotes.

A study based chiefly on observations of Halley's Comet in 1835 and 1910, and of Comet Pons-Brooks in 1883–84.

287

Bobrovnikoff, Nicholas T. On the spectrum of Halley's Comet. Astrophysical journal, v. 66, Oct. 1927: 145–169. illus. QB1.A9, v. 66

Bibliographic footnotes.

288

Bobrovnikoff, Nicholas T. Physical theory of comets in the light of spectroscopic data. Reviews of modern physics, v. 14, Apr./July 1942: 164–178.
QC1.R4, v. 14

Bibliographic footnotes. Bibliography (465 entries): p. 172–178.

Studies of Halley's Comet are cited at intervals throughout the article and listed on p. 176. Photographs are reproduced on p. 160 of the same issue in a section by G. Van Biesbroeck entitled "Structural Texture of Comets."

289

Boehme, Arno, Wolfgang Dittberner, Johannes Doll, Klaus Schwenzfeger, *and* Ernst Stuhlinger. A Comet Halley encounter at 24 km per second.

[München] Technische Universität München, Lehrstuhl für Raumfahrttechnik, 1978. 15, [9] p. (RT-TB 78/5)

NASA accession no. N79–27052.

"A shuttle-launched, electrically propelled spacecraft is described which gains sufficient velocity inside the earth's orbit to encounter Comet Halley on its retrograde orbit with a relative velocity below 25 km s^{-1} at a solar distance of 2.3 AU. Launched in April of 1985 with 100 kg of scientific instruments, the spacecraft will meet the comet on its outbound leg 129 days after perihelion."

290

Bölsche, Wilhelm. Komet und Weltuntergang. Jena, E. Diederichs, 1910. 80 p. NN

"Es besteht das Bedürfnis, in diesem Frühjahr den Weltuntergang infolge eines Zusammenstosses der Erde mit dem Halleyschen Kometen zu proklamieren. Mehrere Menschen empfinden daraufhin den Wunsch, durchaus ethisch zu werden; andere meinen, dass nunmehr aller gute Wein, den die Menschheit auf Reserve angesammelt hat, ausgetrunken und alle schönen Mädchen abgeküsst werden müssten. Für diese an sich löblichen Bestrebungen können streng wissenschaftliche Grundlagen aus Anlass vorliegender Kometentheorien zurzeit noch nicht in ausreichendem Masse gegeben werden. Das zu untersuchen und zu klären ist der Zweck des vorliegenden Büchleins, das übrigens auch nach dem Weltuntergang noch mit Nutzen gelesen werden kann."

291

Börner, Heinz. Kehrt nach 76 Jahren wieder—der Komet Halley. Urania (Leipzig), 59. Jahrg., Feb. 1983: 40–45. illus., ports. Q3.U7, v. 59

References (6): p. 45.

A negative print of a 1910 photograph is reproduced on the inside front cover.

292

Börner, Heinz. Unternehmen VEGA. Urania (Leipzig), 59. Jahrg., März 1983: 12–17. illus. (part col.) Q3.U7, v. 59

References (5): p. 16.

A 1910 photograph of Halley's Comet appears on the inside front cover.

293

Boguslawski, Palon H. L. von. Effemeride della cometa di Halley alla sua comparsa nell'anno 1835 calcolata dal Sig. Capitano Boguslawsky, astronomo di Breslavia, sui seguenti elementi del Signor Pontecoulant. *In* Effemeridi astronomiche di Milano per l'anno 1835. Milano, Dall'Imp. regia stamperia, 1834. p. iii. QB8.I6, 1835

294

Boguslawski, Palon H. L. von. [Die Erscheinung des Halleyschen Kometen] *In* Prussia. Allgemeine preussische Staats-Zeitung, 12. Sept. 1835: 1035. J7.G185, 1835

Quotes from an article published in a Breslau newspaper.

295
Boguslawski, Palon H. L. von. [Der Halleysche Komet] *In* Prussia. Allgemeine preussische Staats-Zeitung, 1. Feb. 1836: 133. J7.G185, 1836

Report of observations made Jan. 15, 17, 20, 22, 23, and 27, from the *Breslauer Zeitung*.

296
Boguslawski, Palon H. L. von. [Der Halleysche Komet] *In* Schlesische Gesellschaft für vaterländische Cultur, *Breslau*. Uebersicht der Arbeiten und Veränderungen ... im Jahre 1835–36. Breslau, Gedruckt bei Grass, Barth, 1836–37. p. 44–50; p. 28–33. AS182.S5, 1836–37

See also the references to Halley's Comet in Sir John Herschel's letter of Aug. 6, 1838, and Boguslawski's reply of Sept. 20, published in the 1839 volume, p. 32–36.

297
Boguslawski, Palon H. L. von. [Halleyischer Comet] Isis von Oken, Heft 6/7, 1834: columns 588–591.

A lecture given at the fourth general session on Sept. 23, 1833, of the conference of German scientists and physicians held in Breslau.

298
Boguslawski, Palon H. L. von. [Halleyischer Comet] Isis von Oken, Heft 9/10, 1836: columns 684–687.

A paper read at the third general session on Sept. 23, 1835, of the conference of German scientists and physicians held in Bonn. The author mentions that the comet was first seen almost simultaneously in Dorpat, Berlin, Breslau, Vienna, and elsewhere in that part of the sky where Herschel discovered Uranus on Mar. 13, 1781.

299
Boguslawski, Palon H. L. von. A letter from M. Boguslawski to the President, dated Breslau, August 28, 1835. *In* Royal Astronomical Society. Monthly notices, v. 3, Jan. 1836: 142. QB1.R7, v. 3

Among the contents briefly summarized is a report of his first observation of Halley's Comet on Aug. 21.

300
Boguslawski, Palon H. L. von. Schreiben des Herrn Hauptmanns v. Boguslawski, Conservators der Breslauer Sternwarte, an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 305–308; 13. Bd., Nr. 293, 28. Nov.: columns 67–70. QB1.A77, v. 12–13

The earlier letter reports his first observations of the comet on Aug. 21 and 22, and the second contains information and predictions based on his numerous subsequent observations.

301
Boi͡adzhiev, Z. A. Khalleevata kometa pri͡ez 1910 god. Priroda (Sofii͡a), g. 15, broĭ 8/9, 1909: 165–166. illus. QH7.P665, v. 15

"Po Glazenap, Nedimova i Svi͡atski."

A drawing shows the night sky over Moscow with the comet's path among the constellations indicated for the period Sept.–Dec. 1909. There is also an orbit diagram.

302

Bollmann, L. F. Die Kometen. Mit besonderer Rücksicht auf den berühmten Halley'schen Kometen im Jahre 1835. Eine populäre Darstellung des Wissenswürdigsten dieser ausserordentlichen Weltkörper, nach der Ansichten der gefeiertsten Astronomen älterer und neuerer Zeiten. Aarau, Bei H. R. Sauerländer, 1835. 75 p. NNC

303

Bonazzi, Ottavio. Andamento del potenziale atmosferico durante il passaggio della Cometa di Halley. Rivista di fisica, matematica e scienze naturali, v. 26, ag. 1912: 160–163. illus.

Bibliographic footnotes.

304

Bond, Alexander Russell. Halley's Comet. St. Nicholas, v. 37, June 1910: 678–681. illus. AP201.S3, v. 37

305

Bonnat, Agustín R. ¡La fin del mundo! Nuevo mundo, año 17, 3 feb. 1910: [9] illus. AP60.N87, v. 17

"Dibujos de Karikato."

306

Bonsdorff, Ilmari. Halleyn pyrstötähti. *In* Kansanvalistusseura. Kansanwalistusseuran kalenteri. 30. wuosik.; 1910. Helsingissä, 1909. p. [190]–196. illus. AY1039.F5K3, 1910

307

Bontor, P. L. Halley's Comet. English mechanic and world of science, v. 91, July 29, 1910: 590–591. illus. T1.E5, v. 91

Letter to the editor from Ceylon reporting impressive views. Sketches show the comet's appearance near Venus a few days before transit and in the evening sky on May 22. Another sketch shows a "curious spectrum" seen at 5:45 p.m. on the day of transit.

308

Borden, Lucie P. The lost tale of the comet: the scare-crow of our modern astronomers. Flaming sword, v. 24, June 1910: 176. BF1995.F3, v. 24

Describes some of the scenes resulting from the comet panic of mid-May; states that nothing happened because the comet's tail disappeared, and accounts for this by the principles of "Koreshan Universology."

309

Borgmeyer, Charles J. Halley's Comet; a lecture delivered at St. Louis, Mo., January 25, 1910. [St. Louis, Mo., St. Louis University, 1910] 43 p. illus., plates. (Bulletin of St. Louis University, v. 6, Apr. 1910) QB723.H2B7

310

Borrelly, Alphonse L. N. Observations de la comète de Halley, faites à l'observatoire de Marseille, au chercheur de comètes. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 149, 22 nov. 1909: 904. Q46.A14, v. 149

Made Nov. 19–20.

311

Borrelly, Alphonse L. N. Observations de la comète de Halley, faites à l'observatoire de Marseille, au chercheur de comètes. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 17 mai 1910: 1225–1227. Q46.A14, v. 150

Made Apr. 21–May 10.

312

Borrelly, Alphonse L. N. Observations de la comète de Halley, faites à l'observatoire de Marseille (au chercheur de comètes de 0^{m},16 d'ouverture). Bulletin astronomique, t. 27, sept. 1910: 365–367. QB1.B9, v. 27

Made May 24–June 22.

313

Borrelly, Alphonse L. N. Sur les apparences de la comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, déc. 1910: 550–552. QB1.S6, v. 24

Describes observations made at Marseille during the period Apr. 16–June 18.

314

Bossert, Joseph F. Observations des comètes faites a l'équatorial de Gambey de l'observatoire de Paris de 1835 a 1855. Réductions par M. J. Bossert. *In* Paris. Observatoire. Annales; mémoires. t. 19. Paris, Gauthier-Villars, 1889. p. D-1–D-95. illus. QB4.P24, v. 19

"Comète de Halley": p. D-3–D-18.

315

Botley, Cicely M. Astronomical centenaries, 1066–1966. *In* British Astronomical Association, *London*. Journal, v. 76, June 1966: 269–271. QB1.B75, v. 76

References (10): p. 271.

Half the article deals with the visits of Halley's Comet in 1066 and 66.

316

Botley, Cicely M., *and* Raymond E. White. Halley's Comet in 1066. San Francisco, 1967. 7 p. illus. (Astronomical Society of the Pacific. Leaflet, no. 452) QB1.A42, no. 452

317

Botley, Cicely M. The legend of P/Halley 1456. Observatory, v. 91, June 1971: 125–126. QB1.O2, v. 91

References (2): p. 126.

Another attempt, in a letter to the editor, to put to rest the fable concerning the comet's excommunication by Pope Calixtus in 1456, as given renewed currency in Lyttleton's Halley Lecture (see item 1931).

318

Botley, Cicely M. Two cometary centenaries. *In* British Astronomical Association, *London*. Journal, v. 68, Oct. 1958: 322–324. QB1.B75, v. 68

References (2): p. 324.

Briefly recalls the return of Halley's Comet in 1758 and the appearance of Donati's Comet in 1858.

319

Bouin, Jean T. Observations de la comète qui a paru dans le courant du mois de Mai 1759, faites à Rouen. *In* Académie des sciences, *Paris*. Mémoires de mathématique et de physique, présentés à l'Académie royale des sciences, par divers savans, & lûs dans ses assemblées. t. 6. A Paris, De l'Impr. royale, M. DCCLXXIV. p. 383–394. Q46.A142, v. 6

320

Bouma, R. J., *and* E. P. Bus. Komeet Halley herontdekt. Zenit, 9. jaarg., dec. 1982: 535. illus. DN-Ob

See also their "Nieuwe baanelementen voor komeet Halley" in 10. jaarg., apr. 1983, p. 169.

320a

Bouška, Jiří. Halleyova kometa. Říše hvězd, roč. 64, čís. 5–6, 1983: 89–95, 116–118. illus. QB1.R45, v. 64

Additional illustrations appear on the front and back covers of čís. 5, and on both sides of the front and back covers of čís. 6, as well as on p. 122–124.

321

Bouvard, Alexis. Éphéméride de la comète de Halley, calculé d'après les élémens de M. G. de Pontécoulant. *In* France. *Bureau des longitudes*. Connaissance des tems ... pour l'an 1837. Paris, Bachelier, 1834. Additions, p. 105. QB8.F9, 1837

For the period Aug. 20–Dec. 26, 1835.

321a

Bowell, Edward L. G., Lawrence H. Wasserman, *and* Robert L. Millis. Stellar appulses by P/Halley, 1983 through 1987. *In* American Astronomical Society. Bulletin, v. 15, no. 3, 1983: 804. QB1.A255, v. 15

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 16–20, 1983, at Ithaca, New York.

Using an orbit for the comet derived by Yeomans, the authors identify 57 stellar appulses during the period Sept. 23, 1983–July 4, 1987.

322

Bowles, Paul F. Halley's Comet. This quarter, v. 1, spring 1929: 244. CU

Poem.

322a

Bowyer, Charles Stuart, G. Courtes, R. Kimble, J. M. Deharveng, Roger F. Malina, *and* Philippe L. Lamy. Wide field ultraviolet observations of Comet Halley with the FAUST Spacelab I instrument. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 207–212. illus. QB723.H2R4 1983

References (13): p. 212.

The FAUST instrument will be used to obtain images of the hydrogen coma at 1216 Å and objective grating spectroscopy from 1300 to 3300 Å of the comet and tail.

323

Boyd, Robert L. F. Halley and contemporary space science. Observatory, v. 101, Oct. 1981: 149–164. illus. QB1.O2, v. 101

References (4): p. 164.

The Halley Lecture for 1981, delivered on May 5 in Oxford, deals chiefly with the Giotto mission.

324

Boyer, René, Éliane Neyvoz, *and* Edgard Stram. La redécouverte de la comète de Halley. L'Astronomie, v. 97, mars 1983: 131–139. illus. DN-Ob

Much of the article is given to a description of the CCD and electronic camera used at the CFH telescope on Mauna Kea. The inside back cover of the issue shows the apparent path of the comet, Apr. 29, 1983–June 22, 1984, against the constellations Monoceros, Gemini, and Orion.

325

Boyle, Robert. Boyle to Newton, 19 August 1682. *In* Newton, *Sir* Isaac. The correspondence of Isaac Newton. v. 2. 1676–1687. Edited by H. W. Turnbull. Cambridge, Published for the Royal Society at the University Press, 1960. p. 379. QC16.N7A4, v. 2

"From the original in the possession of Sir Geoffrey Keynes." The last third of the letter concerns the appearance of the comet, reported, among others, "by a very ingenious French Mathematician, that saw it with his Majesty at Windsor three dayes agoe."

326

Bradbury, Ray. Beyond 1984. Playboy, v. 26, Jan. 1979: 170–172, 353. col. illus. AP2.P692, v. 26 Rare Bk. Coll.

"Halley's Comet is on its way and the 'mad' scientists at the Jet Propulsion Laboratory are planning a little surprise."

327

Bradford, Duncan. The comet of 1759, or Halley's Comet. *In his* The wonders of the heavens, being a popular view of astronomy, including a full illustration of the mechanism of the heavens. Boston, American Stationers Co., J. B. Russell, 1837. p. 193–195. QB44.B79

328

Bradley, James. Comet of 1759. *In his* Miscellaneous works and correspondence. Oxford, At the University Press, MDCCCXXXII. p. 379–380. QB3.B8

Data on 12 observations made during the period Apr. 30–May 25. First published in Rosenberger's "Elemente des Halleyschen Kometen bei seiner letzten Sichtbarkeit," in *Astronomische Nachrichten*, 8. Bd., Beilage zu Nr. 180, Mai 1830, columns 239–242 (QB1.A77, v. 8).

329
Brady, Joseph L. The effect of a trans-Plutonian planet on Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 84, Apr. 1972: 314–322. illus. DN-Ob

References (23): p. 322.

"An orbit and mass for a hypothetical trans-Plutonian planet is determined which reduces the residuals in the time of perihelion passage of Halley's Comet at the seven apparitions from 1910 to 1456 by 93%. The effect of this hypothetical planet on the major planets is briefly discussed, and it is shown that the residuals of two similar periodic comets, Olbers and Pons-Brooks, are also improved."

An extract from this paper, translated by E. Wiedemann and entitled "Über den Einfluss eines transplutonischen Planeten auf den Halley'schen Kometen," appears in *Orion*, 30. Jahrg., Sept. 1972, p. 136–137 (16 references).

A. P. O. Foss, J. S. Shawe-Taylor, and D. P. D. Whitworth, in a letter entitled "Search for a Trans-Plutonian Planet," in *Nature*, v. 239, Sept. 29, 1972, p. 266 (Q1.N2, v. 239), describe an unsuccessful search made at Hurstmonceux for this hypothetical planet, and Arnold R. Klemola and E. A. Harlan, in "Search for Brady's Hypothetical Trans-Plutonian Planet," in the *Publications* of the Astronomical Society of the Pacific, v. 84, Oct. 1972, p. 736 (QB1.A4, v. 84), report a similarly unsuccessful search made at the Lick Observatory. See also Ernst J. Öpik's "No Tenth Planet Yet" in the *Irish Astronomical Journal*, v. 10, Sept. 1972, p. 266–267 (QB1.I753, v. 10).

330
Brady, Joseph L. Halley's Comet: AD 1986 to 2647 BC. *In* British Astronomical Association, *London*. Journal, v. 92, Aug. 1982: 209–215. QB1.B75, v. 92

References (35): p. 214–215.

"In earlier predictions of the apparitions of Halley's Comet, a three- or four-day error, always with the same sign, has appeared consistently. By adding a secular term to the Newtonian equations of motion it has been possible to link the apparitions of 1910, 1835, 1759 and 1682 with a continuous numerical integration. This backward integration not only represents the last four apparitions but also remains remarkably close to the observed times of perihelion passage for more than 2000 years. The times of perihelion passage are compared to observed or derived dates back to 87 BC, and apparitions prior to 87 BC are compared with historical references whenever they could be found. The starting values of this long integration have been used to make a forward integration and to predict the 1986 return."

331
Brady, Joseph L. The motion of Halley's Comet from 837 to 1910. *In* The Motion, evolution of orbits, and origin of comets. International Astronomical Union ... Symposium no. 45 held in Leningrad, U.S.S.R., August 4–11, 1970. Edited by G. A. Chebotarev and E. I. Kazimirchak-Polonskaya, and B. G. Marsden. Dordrecht, D. Reidel Pub. Co., 1972. (International Astronomical Union. Symposium no. 45) p. 155. QB721.M67

Abstract only.

332

Brady, Joseph L. Note regarding nongravitational forces on Halley's Comet. Astronomical journal, v. 72, Nov. 1967: 1184–1186. QB1.A3, v. 72

References (7): p. 1186.

333

Brady, Joseph L. *and* Edna Carpenter. The orbit of Halley's Comet. Astronomical journal, v. 72, Apr. 1967: 365–369. illus. QB1.A3, v. 72

References (2): p. 369.

334

Brady, Joseph L., *and* Edna Carpenter. The orbit of Halley's Comet and the apparition of 1986. Astronomical journal, v. 76, Oct. 1971: 728–739. illus. QB1.A3, v. 76

References (11): p. 739.

335

[Brand, Johann G.] Hessisches Cometen-Ey, bey dessen Vorstellung zugleich auch andere Erd- und Luft- und Himmels-Wunder … verhandelt werden. Marburg, 1682. illus.

Item 5804 in Houzeau and Lancaster's *Bibliographie générale de l'astronomie jusqu'en 1880*, t. 1, 1. ptie.

An illustration of the comet-egg can be found in *Das Weltall*, 7. Jahrg., 1. Apr. 1907, p. 192 (QB1.W4, v. 7).

See also the note in the *Bulletin* of the Société astronomique de France, 24. année, août 1910, p. 352 (QB1.S6, v. 24), in which Mme. Haydée Bouyard reports from Gard that on May 17 one of her chickens produced an egg with a distinct image of a comet on the shell.

336

Brandenburg, F. von. Der Komet ist da! oder, Unumstösslicher Beweis, dass der Halley'sche Komet zwischen Mond und Erde schwebend schon seit zwei Jahren der Erde sehr nahe, alltäglich sichtbar ist. Leipzig, Drobisch, 1835. 16 p.

Listed in the *Catalogue of the Library of the Royal Astronomical Society* (London, 1886).

337

Brandes, Heinrich W. Ueber den Halleyischen Cometen. *In his* Aufsätze über Gegenstände der Astronomie und Physik, für Leser aus allen Ständen. Aus des Verfassers hinterlassenen Papieren hrsg. von C. W. H. Brandes. Leipzig, Bei G. J. Göschen, 1835. p. 15–19. QC3.P5, v. 11

338

Brandes, Heinrich W. Ueber die Gestalt der Cometenschweife und über die Kräfte, welche ihr Entstehen bewirken. Herschels letzte Untersuchungen über das Weltgebäude. Leipzig, J. A. Barth, 1826. [67]–164 p. (*His* Unterhaltungen für Freunde der Physik und Astronomie, 2. Heft) QB51.B81

"Comet von 1456": p. 79.
"Comet von 1531": p. 79–80.
"Comet von 1607": p. 88–89.

339

Brandt, John C. Halley's Comet. *In* McGraw-Hill encyclopedia of science & technology. 5th ed. v. 6. New York, McGraw-Hill Book Co. [1982] p. 450. illus. Q121.M3 1982, v. 6

Briefly discusses the comet's history, orbital and physical properties, the 1986 apparition, and associated meteors. The bibliography lists three references.

Reprinted in the *McGraw-Hill Encyclopedia of Astronomy*, p. 143–144 (New York, McGraw-Hill Book Co. [1983] QB14.M3725 1983).

339a

Brandt, John C. Halley's Comet. Missions to comets. *In* The New solar system. Edited by J. Kelly Beatty, Brian O'Leary, Andrew Chaikin. 2d ed. Cambridge, Mass., Sky Pub. Corp. [1982] p. 184–186. illus. (part col.) QB501.N47 1982

Two photographs of the comet, taken May 7 and 13, 1910, are reproduced on p. 183. Color illustrations show the Bayeux Tapestry panels and a 1910 German postcard.

340

Brandt, John C., Louis D. Friedman, *and* Jürgen Rahe. International Halley Watch (IHW). *In* American Astronomical Society. Bulletin, v. 12, no. 4, 1980: 829. QB1.A255, v. 12

Abstract of a paper presented at the 157th meeting of the American Astronomical Society, Jan. 11–14, 1981, in Albuquerque, New Mexico.

341

Brandt, John C., *and* Robert D. Chapman. Missions to comets. *In their* Introduction to comets. Cambridge [Eng.] New York, Cambridge University Press [1981] p. 196–207. illus. QB721.B8

Most of the chapter describes plans for flyby and rendezvous missions to Halley's Comet. Many additional references to this comet occur throughout the book and can be traced through the index of comets. Relevant illustrations appear on p. [2], 7, 8, [29], [58], 89, 185, [210], [221], [222], and [224].

342

Branley, Franklyn M. Halley: comet 1986. Diagrams by Sally J. Bensusen. New York, Lodestar Books, E. P. Dutton [1983] 83 p. illus. QB723.H2B73 1983

For young readers.

Bibliography: p. 75–76.

Contents: Early appearances.—Comets—evil stars.—Dirty snowballs.—Comet jets and comet tails.—Some notable comets.—The cradle of comets.—The 1986 return of Halley.—International Halley events.

343

Braun, G., Eberhard Grün, Jochen Kissel, *and* N. Pailer. An impact mass-spectrometer for the Halley-probe. *In* Solid particles in the solar system. Symposium no. 90, organized by the IAU in cooperation with COSPAR, held at Ottawa, Canada, August 27–30, 1979. Edited by Ian Halliday and Bruce A. McIntosh. Dordrecht, Holland, Boston, D. Reidel

Pub. Co. [1980] (International Astronomical Union. Symposium no. 90) p. 275–276.
QB790.S64

Reference (1): p. 276.

344

Bredikhin, Fedor A. Die beim Halleyschen Cometen (1835) beobachtete Ausströmungsbewegung. *In his* Mechanische Untersuchungen über Cometenformen. In systematischer Darstellung von R. Jaegermann. St. Petersburg, Commission: Voss' Sortiment (G. Haessel), Leipzig, 1903. p. 83–90.
MH; MWelC; NIC; NPV; PSC

345

Bredikhin, Fedor A. Recherches sur les queues des comètes. *In* Moscow. Universitet. *Astronomicheskaia observatoriia*. Annales de l'observatoire de Moscou. v. 7, 1. livr. Moscou, Librairie A. Lang, 1880. p. [1]–63.
QB4.M89, v. 7

"Comète de 1682 (Halley)": p. 2–8.

See also the *Annales*, 2. sér., v. 1, livr. 1, p. 32 (Moscou, Librairie A. Lang, 1886).

346

Bredikhin, Fedor A. Sur la comète de Halley (1835). *In* Moscow. Universitet. *Astronomicheskaia observatoriia*. Annales de l'observatoire de Moscou. v. 5, 1. livr. Moscou, Librairie A. Lang, 1878. p. [90]–95.
QB4.M89, v. 5

Supplementing this paper Bredikhin quotes Brandes on the appearances of 1531, 1607, and 1456 at the end of his article, "Recherches sur les queues de comètes," in v. 6, 1. livr., of the *Annales*, p. 56–57 (Moscou, Librairie A. Lang, 1879).

See also the *Annales*, 2. sér., v. 1, livr. 1, p. 36 (Moscou, Librairie A. Lang, 1886).

347

Breen, James. [Halley's Comet] *In his* The planetary worlds: the topography and telescopic appearances of the sun, planets, moon, and comets. With numerous illus. London, R. Hardwicke, 1854. p. 277–282. illus.
QB501.B83

Includes description of the phenomena noted by Bessel in Oct. 1835 and reproduces sketches by him (plate 4, fig. 2) and Struve (plate 5).

348

Breen, James. Stanford's maps of the paths of comets visible to the naked eye since 1800; together with the paths of Halley's, Biela's, Brorsen's, Encke's, and Faye's comets of short period. Drawn by James Breen, of the Cambridge Observatory, upon the maps of the stars, in six sheets, on the gnomonic projection, originally designed and arranged by Sir John Lubbock, Bart., and published under the superintendence of the Society for the Diffusion of Useful Knowledge. London, E. Stanford, 1858. 3 p. and 6 col. maps.

Held by the British Library under shelfmark Maps 4. d. 6.

Map 2 shows the track of Halley's Comet during its 1835 apparition.

349
Brelochs, Antonius. Eyn sunderliche Prognostication vber den Cometen, in dem Augstmonat, des M. CCCCC. vnd XXXj. Jares, zü etzlichen malen erschinen. [Mentz? 1531] [10] p. MiU

350
Brendel, Martin. Halleys komet. Kringsjaa, 35. bd., mars 1910: 201–205. AP45.K8, v. 35

See also two letters published under the title "Bare en liden komet-'hale'" in the april 1910 issue, p. 299.

351
Brendel, Martin. Der Halley'sche Komet. *In* Physikalischer Verein, *Frankfurt am Main.* Jahresbericht. 1909/10. Frankfurt am Main, C. Naumann's Druckerei, 1911. p. 62–63. Micro 02843

Summary of a lecture given Apr. 30, 1910.

352
Brendel, Martin. Der Halleysche Komet. Die Umschau, 14. Jahrg., 22. Jan. 1910: 61–64. illus.

353
Brennan, J. F. [Observations of Halley's Comet] *In* British Astronomical Association, *London.* Journal, v. 20, June 1910: 501–502. illus. QB1.B75, v. 20

Made May 14, 17, and 21, at Kingston, Jamaica. A photograph taken on the morning of May 13 is reproduced.

354
Brett, O. C. Halley's Comet April 20, 23, and 26. Popular astronomy, v. 18, Aug./Sept. 1910: 445. QB1.P8, v. 18

Observations made at Humboldt, Kan., with a 3¼-inch telescope.

355
Briggs, Clare A. Danny Dreamer. Chicago Sunday tribune, v. 69, May 29, 1910, comic section: 1. illus. N&CPR

Danny's dream of seeing the comet is contrasted with what actually happened to him when he ventured toward the roof to look for it.

356
Brin, Glen D., *and* D. A. Mendis. Dust release and mantle development in comets. Astrophysical journal, v. 229, Apr. 1, 1979: 402–408. QB1.A9, v. 229

References (19): p. 408.

"On the assumption that the nucleus of a comet consists of a uniform mixture of dust and ices, we have developed a model for the dust release and dust mantle development of comets. The differential mass distribution of the dust is assumed to be a power law with a high-mass cutoff, and the effect of nuclear gravity on the dust blow-off by the sublimating ices is included.

"The model is applied specifically to the 'gassy' periodic comet P/Halley . . ."

357

British Aerospace Dynamics Group, *Bristol. Space Systems Division*. Giotto Comet Halley Mission. Phase A study final report. v. 1. Spacecraft design. [Bristol?] 1980. 118 p. illus. (ESA CR(P)–1489)

NASA accession no. N82–19313.

358

British Astron. Assocn. Comet Section meeting. Comet news service, May 20, 1982: 4. DN-Ob

Most of the article summarizes a talk by David Hughes on the current search for Halley's Comet.

359

British Astronomical Association, *London*. Catalogue of cometary orbits, equinox 1950.0. Fourth report of the Computing Section compiled under the directorship of J. G. Porter. [London, 1961] 97 p. (*Its* Memoirs, v. 39, no. 3) QB1.B8, v. 39

A chronological listing which includes data for 29 appearances of Halley's Comet. Published sources are identified in "Notes and References" (p. 66–80). A supplementary table on p. 90 lists the elements for all the 29 returns together, to show more clearly the changes caused by planetary perturbations.

360

British Astronomical Association, *London*. Report of the section for the observation of comets. Halley's Comet. [By A. C. D. Crommelin and D. Smart] London, Printed and published for the Association by Eyre and Spottiswoode, 1912. 40 p. illus., plates. (*Its* Memoirs, v. 19, pt. 1) QB1.B8, v. 19

Contents: pt. 1 (Dr. Smart). Introductory. History of Halley's Comet. Predictions of the 1910 return. The return in 1910. List of observers. Brightness. Length of tail in degrees. Appearance of nucleus and coma. Appearance and width of tail. Notes on spectrum. Head spectrum. Tail spectrum. Transit of comet on May 18th. Did the earth pass through the comet's tail? Table showing comet's distance from the sun and from the earth. General remarks.—pt. 2 (Dr. Crommelin). Description of the orbit diagrams. Closely approximate elements for the 1910 apparition, and forecast for the next date of perihelion (end of February 1986). Discussion by M. Antoniadi of the form of the tail.—pt. 3. Photographs and drawings of the comet.

Dr. Smart read a summary of the memoir at a meeting of the Association on Feb. 28, 1912, and comments made by members appear in the Association's *Journal*, v. 22, Feb. 1912, p. 220–222. A letter from C. J. Whitmell relating to the memoir appears in the May 1912 issue, p. 393–394.

361

Brodrick, W. B. Halley's Comet from the Norman point of view. Science progress, v. 4, Jan 1910: 492–503. plate. Q1.S79, v. 4

—— —— [London, Jersey Society of London. 1910?] 15 p. illus. (Jersey Society of London. Occasional publications, no. 2) NIC

An address presented to the Jersey Society in London on Dec. 14, 1909. Quotes contemporary annals and modern historians and concludes that the comet, inspiring the Normans and terrifying the English, "was a potent factor in determining the issue of that historic engagement, the Battle of Hastings."

362

Brontë, Patrick. On Halley's Comet, in 1835. Popular astronomy, v. 12, Oct. 1904: 571–573.
QB1.P8, v. 12

Poem.

363

Brooks, William R. Halley's Comet observed during total eclipse of the moon. English mechanic and world of science, v. 90, Dec. 10, 1909: 445.
T1.E5, v. 90

Letter to the editor reporting observation made Nov. 27 with a 10-inch refractor at the Smith Observatory, Geneva, N.Y. A shorter account, entitled "Total Eclipse of the Moon; Halley's Comet Observed," appears in *Popular Astronomy*, v. 18, Jan. 1910, p. 60–61 (QB1.P8, v. 18), and a brief report headed "Halley's Comet," in *Scientific American*, v. 101, Dec. 11, 1909, p. 436 (T1.S5, v. 101).

364

Broom, Britton. Grand preparations afoot for the return of Halley's comet. Christian science monitor, v. 74, Aug. 12, 1982: 17. illus.
N&CPR

Drawing by Albert J. Forbes.

365

Brotbeihel, Mathias. Zu eeren vnd gefallen, dem hochwirdigen Fürsten Philippen Pfaltzgraven by Reyn, hat Mayster Mathias Brotbeyhel über den erschröckenlichen Cometten, vor vnd nach Marie himelfart, so am Rainstram erschinen, auch in Tirol, Schweitz, Schwaben vnd Bairn gesehen, dise klaine ausslegung geschriben. [n.p.] 1531. 6 leaves. illus.

366

Brothers, Alfred. Halley's Comet as seen in 1835, compared with Donati's in 1858. *In* Manchester Literary and Philosophical Society, *Manchester, Eng*. Memoirs and proceedings, v. 54, Sept. 3, 1910: xiii–xiv. plate.
Q41.M2, v. 54

A note read at the society's meeting on Feb. 22, 1910. A brief summary appears in *Nature*, v. 83, Mar. 31, 1910, p. 148 (Q1.N2, v. 83).

367

Broughton, R. Peter. The visibility of Halley's comet. *In* Royal Astronomical Society of Canada. Journal, v. 73, Feb. 1979: 24–36. illus.
QB1.R485, v. 73

References (30): p. 35–36.

"When first seen on each return throughout its long recorded history, Halley's comet has had the same intrinsic brightness though the relative positions of the comet, earth and sun have made some apparitions more spectacular than others. The comet and the earth will be on opposite sides of the sun in February, 1986, making the circumstances of the next appearance the worst in over two thousand years."

368
Brown, Herbert. [Halley's Comet] *In* British Astronomical Association, *London.* [illegible], v. 21, Nov. 1910: 124. QB1.B75, v. 21
Reports observations made during May in New South Wales.

369
Brown, John, *Baptist minister, of Hove.* Halley's Comet. Its history, with that of other noted comets, and other astronomical phenomena, superstitions, etc. London, E. Stock, 1910. 52 p. illus.
Held by the British Library under shelfmark 8561. aaa. 22. (6.).
A short review appears in *Nature*, v. 83, May 5, 1910, p. 276 (Q1.N2, v. 83).

370
Browne, Robert W. [Halley's Comet] *In* Ashmolean Society, *Oxford.* Abstracts of the proceedings, v. 1, no. 8, 1835: 1–4. QH1.A88, v. 1
Presented May 29.
A brief notice, reprinting the Rev. Mr. Browne's list of 12 previous appearances of the comet (only the five most recent of which are now accepted), appears in *Records of General Science*, v. 2, Aug. 1835, p. 148–149 (Q1.R27, v. 2).

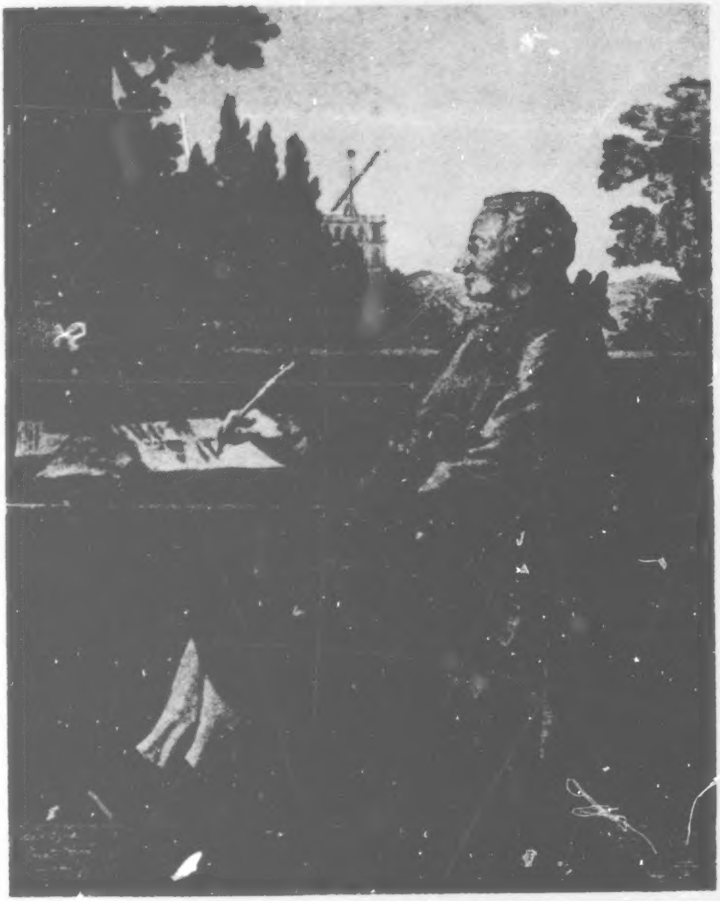
371
Brownlee, W. H. The comet. Saturday magazine, v. 7, Oct. 17, 1835: 149. AP4.S25, v. 7
Poem.

372
Brück, Paul. Observations de la comète de Halley 1909 c faites à l'observatoire de Besançon avec l'equatorial droit de 21 cm. Astronomische Nachrichten, Bd. 188, Nr. 4512, 13. Juli 1911: columns 419–422. QB1.A77, v. 188
Observations made Feb. 1–June 19, 1910. Similar information was published in the *Bulletin astronomique*, t. 28, août 1911, p. 289–290 (QB1.B9, v. 28).

373
Brunet, Pierre. Le retour de la comète de Halley; les dernières années de Clairaut. *In his* La vie et l'œuvre de Clairaut (1713–1765). Paris, Presses universitaires de France, 1952. p. [92]–106. QA29.C55B7
A portrait of Clairaut appears as the frontispiece of the volume.
Also published in *Revue d'histoire des sciences et de leurs applications*, t. 6, jan./mars 1953, p. 1–15; the portrait appeared on p. 164 of the avril/juin issue (Q2.R4, v. 6).

374
Brzeziński, M. Pogadanka o kometach z dodatkiem o komecie Halleja z r. 1910. Warszawa, K. Kopitowski, 1910. 30 p. illus.

375
Brzostkiewicz, Stanisław. Udokumentowane powroty komety Halleya. Urania (Kraków), r. 53, maj 1982: 130–135. QB1.U7, v. 53



Alexis Claude Clairaut, a gifted mathematician who manifested his ability at an early age, contributed to the development of geodesy and celestial mechanics by his studies of the shape of the earth, the three-body problem, the moon's motion, and the orbits of comets. In collaboration with Jérôme de Lalande and Mme. Lepaute, he calculated the 1759 return of Halley's Comet to within a month of its actual perihelion date. He was also known for his exquisite courtesy and elegant appearance. Here he is shown seated at a writing desk; clean-shaven, and with his hair carefully curled and powdered, he wears an elaborately frogged coat, a flowered waistcoat, and lace wrist-bands. In the distance can be seen a corner of the Paris observatory, with a telescope mounted on the roof. The artist, L. C. de Carmontelle, was of humble origin, but his talent and charm made him welcome in society, and he produced a large number of portraits of the notables of his day.

Courtesy Presses Universitaires de France.

376

Bschorr, O., E. F. Jochim, *and* J. Freund. Computer generated pictures of comets. Acta astronautica, v. 6, May/June 1979: 657–667. illus.
TL787.A27, v. 6

References (20): p. 666.

"The conditions in a comet are simulated and the optical picture of the coma and the tail is plotted by use of a computer program which was developed according to Whipple's theory. The model includes local and global variations of evaporation, brightness, repulsive forces, thermal velocity and lifetime of the compounds. With this method the comets Halley, Ikeya and Arend/Roland were simulated.

"In order to match the computer pictures with the real pictures it was necessary to assume a polytropic expansion and acceleration of the evaporated comet material. The final velocity will be much higher than the thermal velocity of the evaporated molecules."

377

Bürgel, Bruno H. Der Komet Halley. Gemeinverständliche astronomische Abhandlung. Berlin, R. Breiting, 1910. 32 p. illus. (Astronomische Bibliothek, Nr. 1)

378

Büthner, Friedrich. Astronomische und astrologische Beschreibung und Betrachtung des Cometen so anno 1682. Mense Aug. et Septemb. in Danzig gewesen. [Danzig, 1682]

Cited in Estreicher's *Bibliografia polska*, t. 13, p. 468, and in the 1860 Pulkovo catalog, p. 775.

379

Buffoni, Letizia, Alessandro Manara, *and* Marco Scardia. Halley's Comet: energy and perturbations. Astronomy and astrophysics, v. 108, Apr. (I) 1982: 141–142. illus.
QB1.A83, v. 108

References (3): p. 142.

"In the next passage there will be a slight decrease in the mechanical energy of the comet with a corresponding decrease of the period. The main perturbation is that of Jupiter, except for two periods in which the greatest action will be exerted by Venus and by Earth."

380

Buffoni, Letizia, Alessandro Manara, *and* Marco Scardia. Halley's Comet: orbital elements evolution. Astronomische Nachrichten, v. 304, Mar. 30, 1983: 83–84. illus.
QB1.A77, v, 304

References (2): p. 84.

"Orbital evolution of the elements of the comet Halley are calculated. The changes in the orbital elements are very small and caused by Jupiter's perturbation except in two periods in which are predominant those of Venus and Earth."

Abstract also in German.

380a

The Bull and the comet. Literary digest, v. 39, Dec. 4, 1909: 1004.
AP2.L58, v. 39

Translates an extensive extract from an article published in *Cosmos*.

381
Buniiâtov, Ziiâ M. Svedeniiâ o kometakh, zvezdakh, meteorakh i zatmeniiâkh v nekotorykh srednevekovykh arabskikh istorichnikakh. *In* Akademiiâ nauk Azerbaĭdzhanskoĭ SSR, *Baku*. Izvestiiâ, seriiâ fiziko-tekhnicheskikh i matematicheskikh nauk, no. 4, 1977: 106–113.
QC1.A376A2, 1977

Summary in Azerbaijani.

Seven medieval Arabic chronicles were examined; of the 63 celestial phenomena recorded, three seem to be apparitions of Halley's Comet—those of 837, 1066, and 1222 (entries no. 4, 34, and 50 on the numbered list).

382
Burckhardt, Johann K. Fortsetzung der Untersuchungen über ältere Cometen. Monatliche Correspondenz zur Beförderung der Erd- und Himmelskunde, 10. Bd., Aug. 1804: 162–167. QB1.M7, v. 10

Among the comets treated are those of 989 (p. 167) and 1301 (p. 164–166), now recognized as apparitions of Halley's Comet. In trying to make sense of conflicting records of the 1301 comet, the author concludes that its motion was direct rather than retrograde.

383
Burckhardt, Johann K. Sur la comète de Halley. *In* France. *Bureau des longitudes*. Connaissance des tems ... pour l'an 1819. Paris, M^{me} V^{e} Courcier, 1816. p. 374–377.

In the "Additions" section, which is not separately paged.

383a
Burnet, Arthur. Halley's Comet. *In* Leeds Astronomical Society. Journal and transactions. no. 18; 1910. Leeds, R. Jackson, 1911. p. 78–79. DLC

Reprints a letter dated May 26 first published in the *Yorkshire Post*, describing observations made May 23 and 25.

384
[Burney, Charles] An essay towards a history of the principal comets that have appeared since the year 1742. Including a particular detail of the return of the famous comet of 1682 in 1759, according to the calculation and prediction of Dr. Halley. Compiled from the observations of the most eminent astronomers of this century. London, Printed for T. Becket, and P. A. De Hondt, in the Strand, MDCCLXIX. 92 p.
AC901.M5, v. 48 Rare Bk. Coll.

The comet of 1759: p. 53–72.

In his dedication, the author notes that "The Comet of 1759 is known throughout Europe by the name of Dr. Halley's Comet."

385
Burnham, Sherburne W. Star and comet Halley. Astronomische Nachrichten, Bd. 185, Nr. 4426/4427, 13. Juli 1910: columns 179–180.
QB1.A77, v. 185

Observations made at the Yerkes Observatory on Sept. 15, Oct. 13, Oct. 14, Nov. 3, and Nov. 11, 1909. New meridian positions for the comparison stars appear in Bd. 188, Nr. 4498, 17. Mai 1911, columns 181–182.

386

Burrows, R. R. Halley comet rendezvous with a SEPS vehicle. AIAA 16th Aerospace Sciences Meeting, Huntsville, Alabama/January 16–18, 1978. New York, American Institute of Aeronautics and Astronautics [1978] 13 p. illus. ([AIAA paper] 78–50) Sci RR

References (16): p. 7–8.

"An analysis of the performance of a Solar Electric Propulsion System (SEPS) vehicle rendezvousing with Halley's comet just prior to its February 1986 perihelion is described ... Results indicate a rendezvous is feasible with a minimal advance in solar cell and ion engine technology."

387

Butler, Charles P. [Halley's Comet] Knowledge & scientific news, new ser., v. 4, Mar. 1907: 64; v. 5, May, Aug., Nov. 1908: 106, 190, 262; v. 6, Feb., Sept., Nov.–Dec. 1909: 68–69, 351–352, 430, 469; v. 7, Jan.–Mar. 1910: 26, 67, 107–108. illus. Q1.K7, n.s., v. 4–7

News notes under a variety of headings; some include ephemerides and diagrams showing the comet's path among the stars.

The Nov. 1909 column is reprinted under the title "Return of Halley's Comet; an Ephemeris for This Year" in *Scientific American Supplement*, v. 68, Nov. 27, 1909, p. 351 (T1.S52, v. 68).

388

Butler, Charles P. The spectrum of Halley's Comet. *In* Royal Society of London. Proceedings, ser. A, v. 84, Jan. 26, 1911: 523–526. plate. Q41.L7, v. 84A

Summarized in *Popular Astronomy*, v. 19, Mar. 1911, p. 193 (QB1.P8, v. 19).

389

Buzzell, Francis. The approach of Halley's Comet. Popular mechanics, v. 13, Apr. 1910: 491–494. illus. T1.P77, v. 13

An abridgment without illustrations appears in *Keystone*, v. 31, Apr. 1910, p. 553 (TS720.K4, v. 31).

390

Byrd, Deborah L. Halley's Comet space mission. McDonald Observatory news, v. 10, Jan. 1982: 4–7. port.

Jeff Brown comments on this article in a letter published in the Feb. 1982 issue, p. 2.

391

Byrnes, Dennis V., *and* Louis A. D'Amario. A combined Halley flyby/Galileo mission. AIAA/AAS Astrodynamics Conference, August 9–11, 1982, San Diego, California. New York, American Institute of Aeronautics and Astronautics, 1982. 9 p. illus. (AIAA [paper] 82–1462) Sci RR

References (5): p. 9.

The authors note that although a combined mission is no longer being considered, the added cost to the baseline Galileo mission would be far less than the cost of a separate Halley mission.

392

Cacciatore, Niccolò. Riflessioni sull'imminente ritorno della cometa di Halley; per la gente di buon senso del 1835. Giornale di scienze, lettere e arti per la Sicilia, v. 50, magg. 1835: 131–174.

Includes an ephemeris for Palermo for the period Aug. 15, 1835–Jan. 15, 1836.

393

Calder, Nigel. The comet is coming! The feverish legacy of Mr Halley. New York, Viking Press [1981] 160 p. illus., facsims., col. plates, ports.
QB721.C34

Bibliography: p. 152–156.

Reviewed by Simon Schaffer in the *London Review of Books*, v. 3, Feb. 19/Mar. 4, 1981, p. 17; Marcia Bartusiak in *Discover*, v. 2, Apr. 1981, p. 90 (Q1.D57, v. 2); Barbara H. Seeber in *Science 81*, v. 2, Apr. 1981, p. 99 (Q1.S354, v. 2); David W. Hughes in *Nature*, v. 290, Apr. 23, 1981, p. 652–653 (Q1.N2, v. 290); Timothy Ferris in *New York*, v. 14, June 1, 1981, p. 50, illustrated with a 1910 cartoon (F128.1.N4, v. 14); John P. Wiley, Jr., in *Smithsonian*, v. 12, Sept. 1981, p. 171–175 (AS30.S6, v. 12); Michael J. Hendrie in the *Journal* of the British Astronomical Association, v. 91, Oct. 1981, p. 606–607 (QB1.B75, v. 91); John C. Brandt in *Archaeoastronomy*, v. 4, Oct./Dec. 1981, p. 48–49 (E59.A8A68, v. 4); and Jearl Walker in *SciQuest*, v. 55, Mar. 1982, p. 31 (QD1.C74, v. 55). A lengthy extract appears in *Science Digest*, v. 89, May 1981, p. 23–28 (Q1.S383, v. 89). A review of both Calder's book and Yeomans' *Comet Halley Handbook*, by Arlen J. Large, appears in the *Wall Street Journal*, v. 198, Aug. 7, 1981, p. 18 (N&CPR).

394

Calder, Nigel. Das Phänomen Halley. Kometenfieber—eine Erkrankung besonderer Art. Die Umschau, 81. Jahrg., 11. Dez. 1981: 742–744. illus.

"Comets that appear in the heavens do not endanger the Earth directly. The danger they threaten is the superstition of people who regard comets as omens of ill fortune. This is demonstrated by a series of examples from various times and cultures."—English summary.

The preceding article in this issue, "Im Schwung um die Sonne: neue Impulse für die Kometenforschung" (p. 738–741), by Klaus Jockers, includes a section on the space missions to Halley's Comet.

395

California Institute of Technology, *Pasadena. Jet Propulsion Laboratory*. Halley's Comet: a unique opportunity. [Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1982] folder ([8] p.) illus. (JPL 400-156)

On plans for studying the comet during its 1985/86 return, emphasizing the activities being coordinated by the International Halley Watch.

396

California Institute of Technology, *Pasadena. Jet Propulsion Laboratory*. Halley's Comet: a unique opportunity in space exploration. [n.p., 1981] 35 p. col. illus.

"S22–499."

Promotional booklet that includes comparison of the proposed Halley Intercept Mission with the spacecraft missions being prepared by Japan, the European Space Agency, and the Soviet Union.

397

California Institute of Technology, *Pasadena. Jet Propulsion Laboratory.* Halley's Comet is coming! April 20, 1910–February 9, 1986. [Pasadena? 1981] folder ([6] p.) illus. (JPL 400–129)

Informational leaflet on the proposed Halley Intercept Mission.

398

California Institute of Technology, *Pasadena. Jet Propulsion Laboratory.* Journey to Halley's Comet. [Rev. n.p., National Aeronautics and Space Administration, 1980] 7 p. illus. (part col.)

"1060–144."

Pamphlet promoting the Halley Intercept Mission.

399

California Institute of Technology, *Pasadena. Jet Propulsion Laboratory.* Mission summary: Halley flyby/Tempel 2 rendezvous. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1979. 8 p. illus. (JPL publication 79–4)

NASA accession no. N79–15133.

"... provides an overview of a unique mid-1985 mission to investigate and compare two different comets during a single flight."

400

Cambridge. University. *Observatory.* Astronomical observations made at the Observatory of Cambridge by George Biddell Airy. v. 8; for the year 1835. Cambridge, Printed at the Pitt Press, by J. Smith, Printer to the University, M.DCCC.XXXVI. lxv, 234 p. QB4.C17, v. 8

"Right ascensions and north polar distances of Halley's Comet and stars, observed with the equatoreal and the clock Graham, 1835 and 1836": p. [169]–215.

"Physical observations on the comet": p. [216]–221.

The tabular data are discussed on p. xlix–lxv of the introduction.

401

Camille Flammarion. Says we may die laughing when the comet comes. *In* Los Angeles times. Illustrated weekly magazine, v. 15, Mar. 13, 1910: 325. port. AP2.L815, v. 15

Quotes the French astronomer's speculations about what the comet's tail will do to the earth's atmosphere.

402

Campariole, Paul Clement. [Halley's Comet] English mechanic and world of science, v. 91, Feb. 11, Mar. 4, May 20, June 3, June 17, July 8–15, 1910: 34, 103, 357, 399, 452, 521, 544–545; v. 92, Aug. 5, 1910: 15. illus. T1.E5, v. 91–92

Letters to the editor reporting observations made at Port-of-Spain, Trinidad, on Jan. 9; Jan. 10–15, Jan. 29, Feb. 1–2, and Feb. 4–5; Apr. 20;

May 5; May 15–17; and June 27, 28, and 30. The fifth letter includes a report of an unsuccessful attempt to watch the transit, and the sixth summarizes observations made during May and June. Sketches accompanying the second, fourth, sixth, and seventh letters show the comet's position on Feb. 1 and 2, its appearance near Venus and the waning moon on the morning of May 5, its general appearance on the mornings of May 15–17 "when it was at its best," and its progress during the final days of June.

403
Campbell, Frederic. Halley's Comet. Christian work and the evangelist, v. 88, Jan. 15, 1910: 86–87. illus. BR1.C64, v. 88

404
Campbell, Frederic. Peril in the comet's tail. Christian work and the evangelist, v. 88, May 14, 1910: 653–654. illus. BR1.C64, v. 88

See also the diagram entitled "Relative Positions of Halley's Comet to the Earth, and the Sun" in the May 7 issue, p. 628.

405
Campbell, Frederic. The religious significance of the comet. Homiletic review, v. 59, Jan. 1910: 10–13. illus. BR1.H8, v. 59

406
Campbell, Frederic. Thru the comet's tail. Independent, v. 68, May 12, 1910: 1012–1015. illus. AP2.I53, v. 68

407
Campbell, William W. The coming of Halley's Comet. Sunset, v. 24, Apr. 1910: 365–371. illus., port. F851.S95, v. 24

The cover of the issue, by J. A. Cahill, depicts the comet over the San Francisco skyline.

408
Campbell, William W. The return of Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 21, Oct. 1909: 188–195. illus., plates, ports. QB1.A4, v. 21
—— ——— *In* Smithsonian Institution. Annual report. 1909. Washington, 1910. p. 253–259. illus., plates, ports. Q11.S66, 1909

Some excerpts, with a few changes, are reprinted in the *Journal* of the Royal Astronomical Society of Canada, v. 3, Nov./Dec. 1909, p. 480–481 (QB1.R485, v. 3).

409
Campbell, William Wilfred. Stella flammarum, an ode to Halley's Comet. *In his* The poetical works of Wilfred Campbell, edited with a memoir by W. J. Sykes. London, Hodder and Stoughton [1923] p. 285–286. PR6005.A42 1923

410
Cane, William G. It didn't. New York times, v. 59, May 19, 1910: 8. N&CPR

Poem. The writer imagines a variety of scenes that might occur "if Halley's comet bumps!"

411

Canetti, Elias. [Der Komet] *In his* Die gerettete Zunge; Geschichte einer Jugend. [2. Aufl. München] C. Hanser [1977] p. 33–35.
PT2605.A58Z515 1977

The author, born in 1905, recalls the terror of the comet in Rushchuk (now Ruse), a Bulgarian town on the Danube.

Reprinted in *Sterne und Weltraum*, 21. Jahrg., Dez. 1982, p. 500 (QB1.S854, v. 21).

—— [The comet] *In his* The tongue set free; remembrance of a European childhood. Translated from the German by Joachim Neugroschel. New York, Seabury Press [1979] (A Continuum book) p. 20–21.
PT2605.A58Z51513

412

Caracas. Observatorio Cajigal. Algunas observaciones del cometa de Halley en el Observatorio Cajigal de Caracas. Caracas, 1911. 7 p. (*Its* Publicaciones)
CtY

Signed Luis Ugueto, director.

412a

Carey, W. C., *and* James A. M. McDonnell. Dust modelling of fast-flyby missions: implications of *in situ* measurements. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 179–182. illus.
QB723.H2R4 1983

References (4): p. 182.

A computer model of cometary dust distributions during the Giotto flyby of comet Halley "to obtain criteria for use in optimising scientific return of data and engineering design" was developed. The results and their implications, particularly for the Giotto Dust Impact Detection System, are discussed.

413

Carion, Johann. Practica new auffs MDXXXII jar. Mit einer auslegung des gesehen Cometens an C. F. G. von Brandenburg. Nürnberg, Petreius, 1531. 8 leaves.

Zinner 1435.

414

Carl, Philipp F. H. Der Halley'sche Comet. *In his* Repertorium der Cometen-Astronomie. Muenchen, M. Rieger'sche Universitaets-Buchhandlung, 1864. p. 364–374.
CtY; DN-Ob; MA; MH; NjP; WU

Includes a table of orbital elements for the apparitions of 12 B.C. and A.D. 66, 141, 989, 1066, and 1301 through 1835.

415

Carr, L. H. A., *and* N. E. V. Taylor. Comets: 1910a and Halley's. English mechanic and world of science, v. 91, Feb. 4, 1910: 12.
T1.E5, v. 91

Letter to the editor reporting an observation of Halley's Comet made Jan. 29 at Blackpool.

416
Carrigan, William T. Halley's Comet. Fleet review, v. 1, May 1910: 12–13. V1.F6, v. 1

See also an editorial, "The Cause of Unrest," on p. 14 of the same issue.

417
Carter, H. Miles. [Halley's Comet] English mechanic and world of science, v. 91, June 3, 1910: 399. T1.E5, v. 91

Letter to the editor reporting a naked-eye observation on May 23 at Exeter. The writer finds the comet "distinctly disappointing."

418
Cassini, Giovanni Domenico. Calcul des observations de la comète, pendant le temps de son apparition en 1682, faites à l'observatoire de Paris, par M. Jean-Dominique Cassini, et par MM. Picard et de La Hire. Publié par M. Cassini de Thuri. Paris, Durand, 1760. 43 p.

Held by the Bibliothèque nationale (Paris) under shelfmark V. 8065.

419
Cassini, Giovanni Domenico. Observations de la comète de 1531, pendant le temps de son retour en 1682, faites par Jean-Dominque Cassini et publiées par César-François Cassini en 1759. Paris, Durand, 1759. 38 p. plates.

Two copies held by the Bibliothèque nationale (Paris) under shelfmarks Vp. 6178 and Vz. 1790.

An analytical review appears in *Mémoires pour l'histoire des sciences et beaux-arts*, juil. 1759, 2. v., p. 1861–1869 (AS161.T8, 1759).

420
Cassini, Giovanni Domenico. Premières observations de la comète de ce mois d'aoust 1682, présentées au roy par M. Cassini. Paris, S. Mabre-Cramoisy, 1682. 7 p. NN

421
Cassini de Thury, César F. Observations de la comète de 1759, et réflexions sur le retour des comètes. *In* Académie des sciences, *Paris*. Mémoires de mathématique et de physique, tirés des registres de l'Académie royale des sciences. Année M. DCCLXVII. [A Paris, De l'Impr. royale, M. DCCLXX] p. 241–251. Q46.A13, 1767

422
Casteels, Lodewijk. Observations physiques de comètes faites en 1910 et 1911. *In* Brussels. Observatoire royale de Belgique. Annales. Nouv. sér. Annales astronomiques. t. 13. Bruxelles, Hayez, 1914. p. 619–625. plate. QB4.B99, n.s., v. 13

"Comète 1909 c (Halley)": p. 619. Observations were made May 18–26, 1910.

423
Casteels, Lodewijk. Sur un phénomène lumineux remarquable, observé lors du passage du noyau de la comète de Halley devant le disque solaire. *In* Société scientifique de Bruxelles. Annales. 35. année; 1910/11.

[1. ptie Documents et comptes rendus] Louvain, Secrétariat de la Société scientifique (J. Thirion), 1911. p. 86–93. Q56.S7, v. 35

Bibliographic footnotes (the last of which continues to p. 94).

424

Castro, Rosauro. Beobachtungen der Kometen Halley 1909 c, Faye 1910 e und D'Arrest 1910 c und von Nebelflecken mit dem 43 cm Refraktor der Sternwarte La Plata. Astronomische Nachrichten, Bd. 194, Nr. 4635, 1. März 1913: columns 33–42. QB1.A77, v. 194

With a preliminary note by F. W. Ristenpart.

"Halleyscher Komet 1909 c": columns 37–38. Comparison stars are listed in columns 39–40.

425

[Caumont, Jean de] La comete qui est aparuë le 25. de Septembre 1607. Par G. L'Apostre [pseud.] Saint-Omer, F. Bellet [1607?] [8] leaves.

Held by the Bibliothèque nationale at Paris under shelfmark V. 21086.

425a

Causes of disaster. Theory of comets advanced by Edwin F. Naulty. Sunday star (Washington), May 8, 1910, pt. 1: 16. N&CPR

Includes a nearly complete presentation of Naulty's paper on Halley's Comet. A shorter report, entitled "Calls Comet Searchlight," appears in the *New York Times*, v. 59, May 16, 1910, p. 2 (N&CPR).

426

Celoria, Giovanni. Breve communicazione sul passaggio della cometa di Halley sul disco solare (19 maggio 1910). *In* Istituto lombardo di scienze e lettere, *Milan.* Rendiconti, ser. 2, v. 43, fasc. 10/11, 1910: 359–360. AS222.L616, s. 2, v. 43

427

Celoria, Giovanni. Cometa del 1456 o cometa di Halley. *In his* Sulle osservazioni di comete fatte da Paolo dal Pozzo Toscanelli e sui labori astronomici suoi in generale. Milano, U. Hoepli, 1921. (Milan. Osservatorio astronomico di Brera. Pubblicazioni, n. 55) p. 20–36. plates (part fold.) QB4.M63, no. 55
QB724.C4

Bibliographic references relating to this chapter included in "Note ed osservazioni" (p. [74]–75).

Three plates reproduce the manuscript pages on which Toscanelli recorded and charted his observations of this comet (fototipia 8–10); tavola 8 is a modern transcription of Toscanelli's chart with stars identified and the comet's locations marked for the period June 20–July 5.

First published (without the "fototipia" plates) in Gustavo Uzielli's *La vita e i tempi di Paolo dal Pozzo Toscanelli; ricerche e studi*, p. 325–344 (Roma, Auspice il Ministero della pubblica istruzione, MDCCCXCIII. Raccolta di documenti e studi pubblicati dalla R. Commissione colombiana pel quarto centenario dalla scoperta dell'America, pt. 5, v. 1. E111.I88, pt. 5, v. 1).

The manuscript on which Celoria's study is based is in the collections of the Biblioteca Nazionale Centrale in Florence, where it was first noticed in modern times by Donati in 1864.

428

Celoria, Giovanni. Sull'apparizione della cometa di Halley avvenuta nell'anno 1456. *In* Istituto lombardo di scienze e lettere, *Milan.* Rendiconti. ser. 2, v. 18; 1885. Milano, U. Hoepli. p. 112–125. AS222.L616, s. 2, v. 18

Also published in *Astronomische Nachrichten*, Bd. 111, Nr. 2645, 27. Jan. 1885, columns 65–72 (QB1.A77, v. 111).

429

Ceretti, Antonio. El cometa de Halley en Buenos Aires: datos estadisticos y astronomicos. Buenos Aires, 1912.

Cited in "*La Fin del mundo*", p. 14 ([Buenos Aires] Centro Editor de America Latina [1972, ©1971] La historia popular, 67. F3001.3.P37 1972), by Lidia Parise and Abel González.

430

Cerulli, Vincenzo. La grandezza della cometa d'Halley. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 3, magg. 1909: 175–177.

431

Ceruti, Giuliano. Ionizzazione e elettrizzazione atmosferica durante la congiunzione con la cometa di Halley. Milano, Rebeschini, 1910. 10 p.

432

Chabot, J. J. Taudin. De naderende staarster van Halley, waargenomen in California. De Natuur, 30. jaarg., 15 mei 1910: 136. illus. Q4.N2, 1910

Reproduces a photograph taken at Mount Hamilton on Dec. 13, 1909.

432a

Chalmers, Stephen. The truth about the comet, and about the disappearance of Dr. Gook, Heer Flounder, and the truthful author. New York times, v. 59, Feb. 20, 1910, magazine section: 12. illus. N&CPR

Story about an expedition to capture Halley's Comet and prevent it from damaging the earth, and how it escaped and became Comet 1910 a.

433

Chalmers, Stephen. Who goes there? New York times, v. 59, May 17, 1910: 8. N&CPR

Poem.

434

Chambers, George F. Halley's Comet. Knowledge, new ser., v. 7, June–July, Sept. 1910: 243, 277, 363. Q1.K7, n.s., v. 7

News notes. The second quotes a report from R. Wilberforce in Accra, and the third, entitled "Halley's Comet as Seen in South Africa," gives an account by H. R. Butcher in Cape Colony.

435

Chambers, George F. Halley's Comet. *In his* The story of the comets, simply told for general readers. Oxford, At the Clarendon Press, 1909. p. [102]–125. illus., port. CU; CtY; DN-Ob; DWP; ICJ; NIC; NN; NjP OO; OCl; PHC; PP; PSC; ViU

See also Appendix IV, "Ephemeris of Halley's Comet," covering the period Sept. 11, 1909–July 25, 1910 (p. [246]–249), and other references cited in the index.

The text of p. [102]–123, with some modifications and one illustration, was reprinted as "Halley's Comet, By Far the Most Interesting of the Periodic Comets," in *Scientific American Supplement*, v. 69, Apr. 9–16, 1910, p. 238–239, 255–256 (T1.S52, v. 69).

Compare also the section on Halley's Comet in the author's *A Handbook of Descriptive and Practical Astronomy*, 4th ed., v. 1, p. 437–444 (Oxford, At the Clarendon Press, 1889. QB43.C45, v. 1).

436
Chambers, George F. Halley's Comet in 1456 and the Pope. *In* British Astronomical Association, *London*. Journal, v. 18, July 1908: 379–381.
QB1.B75, v. 18

A paper read at a meeting of the Association on July 1, 1908; comments made by members appear on p. 351–352.

437
Chambers, George F. Halley's Comet in 1301. *In* British Astronomical Association, *London*. Journal, v. 24, Feb. 1914: 263–264. QB1.B75, v. 24

A paper read at a meeting of the Association on Feb. 25, 1914; comments made by members appear on p. 237–238.

438
Chambers, George F. Halley's Comet, with brief notes on comets in general. Oxford, Clarendon Press, 1910. 47 p. illus., plates, [illegible]
MB; NN; PBa

A summary of the pamphlet and of reports on the knowledge gained during the 1910 apparition, by William Beebe, appears in the *American Journal of Science*, 4th ser., v. 30, Aug. 1910, p. 154–156 (Q1.A5, s. 4, v. 30).

439
Chandler, David. Halley's Comet, 1985–1986 ... A once-in-a-lifetime encounter. La Verne, CA, 1982. 1 sheet. 28 × 23 cm.

The earth's orbit, a part of the comet's orbit (from Aug. 13, 1985, to Aug. 8, 1986), and a stand are printed on the cardboard sheet. Perforations make them easily removable for assembly into a simple but informative three-dimensional model of the comet's coming encounter with the earth. Instructions are included.

440
Chang, Yü-che. Halley's Comet: tendencies in its orbital evolution and its ancient history. Chinese astronomy, v. 3, Mar. 1979: 120–131.
QB1.C35, v. 3

References (11): p. 131.

"The main part of the discussion is centered on the historical records and their identification with returns of the comet."

First published as "Ha-lei hui hsing ti kuei tao yen pien ti ch'ü shih ho t'a ti ku tai li shih" in *T'ien wen hsüeh pao; Acta Astronomica Sinica*, ti 19 chüan, 1978 nien 6 yüeh, p. 109–118 (3695, v. 19 Orien China). An abridged translation, entitled "The Tendency in Orbital Evolution of

Halley's Comet and Its Ancient History," appears in *Archaeoastronomy*, v. 2, spring 1979, p. 15–16 (559.A8A68, v. 2).

441
Changemens physiques dans la comète de Halley. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 1, 23 nov. 1835: 364–365. Q46.A14, v. 1

Short note and comment on observation made by Cooper in Ireland on Oct. 19.

442
Chant, Clarence A. Halley's Comet. *In* Royal Astronomical Society of Canada. Journal, v. 4, Mar./Apr. 1910: 104–115. illus., facsims., port. QB1.R485, v. 4

A history for the general reader, first published in the February issue of *Westminster* (Toronto).

A drawing of the comet as seen from Toronto, Apr. 27, 1910, made by Dr. Chant, appears on p. 158 of this issue

443
Chant, Clarence A. Halley's Comet as seen in tropical Africa. *In* Royal Astronomical Society of Canada. Journal, v. 7, Mar./Apr. 1913: 141. QB1.R485, v. 7

Quotes part of a letter from A. W. Banfield, a missionary at Shonga, Nigeria, briefly describing the majestic appearance of the comet viewed from his location.

444
Chant, Clarence A. Path of Halley's Comet among the stars from October 1, 1908 to July 13, 1910. (Drawn by A. B. Fennell). *In* Royal Astronomical Society of Canada Journal, v. 3, Nov./Dec. 1909: 484A. fold. illus. QB1.R485, v. 3

Drawn from the ephemeris by Cowell and Crommelin published in the Royal Astronomical Society's *Monthly Notices*, v. 68, Mar. 1908, p. 394–395 (QB1.R7, v. 68). A corrected ephemeris appears in the Canadian society's *Journal*, v. 4, Mar./Apr. 1910, p. 160–161.

445
Chant, Clarence A. The transit of Halley's Comet across the sun and the passage of the earth through the comet's tail. *In* Royal Astronomical Society of Canada. Journal, v. 4, May/June 1910: 238–243. QB1.R485, v. 4

In addition to extracts from reports appearing in other publications, includes passages from letters concerning phenomena observed at sunset on May 18, received from correspondents in Victoria, B.C., and Birson, Sask.

446
Chant, Clarence A. [Visibility of Halley's Comet] *In* Royal Astronomical Society of Canada. Journal, v. 3, Nov./Dec. 1909: 482–484. QB1.R485, v. 3

In response to a query from G. J. B., "How soon can Halley's Comet be detected, before it reaches the Sun, with a 12-power binocular glass; and near what star will it be."

447

Charakteristische Darstellungen des Halleyschen Kometen. Sirius, 43. Bd., Aug. 1910: 189. plate. DN-Ob

The plate, facing p. 188, reproduces a photograph taken Apr. 21 by H. E. Wood of Johannesburg (previously published in *Astronomische Nachrichten*, Bd. 185, Nr. 4420, 17. Juni 1910) and sketches of the comet's head made at Juvisy by Quénisset during April and May.

448

Charlois, Auguste. Observations de comètes et de planètes, faites à l'observatoire de Nice (équatorial Gautier, de 0m,38 d'ouverture). Bulletin astronomique, t. 27, juil. 1910: 263–265. QB1.B9, v. 27

Halley's Comet: p. 263. Observations were made Jan. 3–Feb. 25. Comparison stars are listed on p. 264.

449

Charlois, Auguste. Observations de planètes et de la comète Halley, faites à l'observatoire de Nice (équatorial Gautier de 0m,38 d'ouverture). Bulletin astronomique, t. 27, mai 1910: 153–157. QB1.B9, v. 27

Halley's Comet: p. 155, 157. Observations were made Dec. 10–31, 1909.

450

Chartrand, Luc. Ces chers ancêtres. L'astre chevelu parmi nous. Québec science, v. 17, nov. 1978: 52–53. port.

Halley's Comet as seen in Quebec, 1835.

451

Chartrand, Luc. Ces chers ancêtres. "La comète est de retour!" Québec science, v. 17, déc. 1978: 54–55.

The 1910 return of the comet, as perceived in Quebec.

452

Chartrand, Mark R. Comet chasing. Omni, v. 1, Oct. 1978: 24, 26. illus. AP2.O452, v. 1

On NASA's plans to launch a spacecraft in July 1985 that will send a probe to pass near Halley's Comet and then proceed to rendezvous with Comet Tempel 2. The solar-powered ion engine that will drive the spacecraft is described.

453

Chasing Halley. Science news, v. 119, Apr. 11, 1981: 228. illus. Q1.S76, v. 119

Chiefly on what has been learned or inferred about planned Soviet missions.

454

Chasing Halley's Comet. Astronomy, v. 6, Apr. 1978: 68. illus. QB1.A7998, v. 6

"... an artist's concept of the Ion Drive Spacecraft which has been proposed for chasing and studying Halley's Comet when it approaches Earth in 1986."

455

Chatelu, Jules. Observations de comètes et de planètes, faites à l'observatoire de Paris (équatorial de la Tour de l'Est de 0^m,38 d'ouverture). Bulletin astronomique, t. 28, juin 1911: 211–213. QB1.B9, v. 28

Halley's Comet: p. 211, 213. Observations were made during Dec. 3, 1909–Apr. 25, 1910. Comparison stars are listed on p. 212–213.

456

Chatelu, Jules. Observations de comètes et de planètes, faites à l'observatoire de Paris (équatorial de la Tour de l'Ouest, de 0^m,31 d'ouverture). Bulletin astronomique, t. 28, août 1911: 293–297. QB1.B9, v. 28

Halley's Comet: p. 293, 297. Observations were made during May 24–June 7, 1910. Comparison stars are listed on p. 296.

457

Chatwood, Arthur B. The transit of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 614. QB1.R7, v. 70

A negative report from Secunderabad.

458

Chavez, Celso. Observaciones del cometa Halley. *In* Asociación Peruana de Astronomía. Boletín, v. 5, abr./jul. 1959: 255–261. QB1.A294, v. 5

The author's recollections of seeing the comet in 1910, when he was five years old.

459

Cherednichenko, Vladimir I. O razmerakh oblasteĭ sushchestvovanii͡a molekul C_2 i C_3 v kometakh. *In* Fizika komet i meteorov. [Otv. redaktor V. P. Konopleva. Kiev, Naukova dumka, 1965] (Akademii͡a nauk Ukrainskoĭ SSR. Respublikanskiĭ mezhvedomstvennyĭ sbornik. Serii͡a "Astronomii͡a i astrofizika") p. 37–45. QB721.F49

References (27): p. 44–45.

Calculation of the changes in diameter of the head of Halley's Comet, 1910 II, with emission of C_2 IV for $0.6 \leq r \leq 2.3$ AU by using a scheme for converting C_3H_6 and C_2H_2 molecules in the photon and corpuscular radiation field of the sun. The results of the calculation are in good agreement with observations.

460

Cheseaux, Jean Philippe Loÿs de. Traité de la comète qui a paru en Decembre 1743 & en Janvier, Fevrier & Mars 1744. A Lausanne, Chez M.-M. Bousquet, MDCCXLIV. 308 p. fold. tables. CtY; MiU; NN; NNC

"Remarques sur la maniére de reconnoitre une même comete dans ses différentes apparitions, de celles de 1453, 1531, 1601, 1682, qui doit reparoitre en 1758": p. 44–47.

461
Chesley, Charles H. The comet. Illustrated Sunday magazine of the Buffalo Sunday times, May 22, 1910: 7. AP2.I365, 1910
Poem.

462
Chevalier, Jean. Observation de la cométe de l'année 1759, faite a Lisbonne. *In* Académie des sciences, *Paris*. Mémoires de mathématique et de physique, présentés à l'Académie royale des sciences, par divers savans, & lûs dans ses assemblées. t. 5. A Paris, De l'Impr. royale, M. DCCLXVIII. p. 37–44. Q46.A142, v. 5

463
Chevalier, Stanislas. Comète de Halley. Observations photographiques. *In* Zi-ka-wei, China. Observatoire. Annales de l'observatoire astronomique de Zô-sè (Chine). t. 5; année 1909. Chang-hai, Impr. de la Mission catholique a l'Orphelinat de T'ou-sè-wè, 1911. p. 94–97. plate.
QB4.Z6, v. 5
A similar report, with one illustration, was published in *Astronomische Nachrichten*, Bd. 192, Nr. 4585, 26. Juni 1912, columns 15–20 (QB1.A77, v. 192).

464
Chevalier, Stanislas. Dernier écho de la comète de Halley. *In* Société astronomique de France. Bulletin, 26. année, sept. 1912: 433.
QB1.S6, v. 26
Describes the appearance of the comet at Zô-sè on May 13, 1910, and a photograph taken May 24.

465
China fears Halley's Comet. Popular mechanics, v. 13, May 1910: 620.
T1.P77, v. 13
"The Chinese officials are said to fear that the sudden appearance of the comet, added to the already tense feeling, would inspire terror which might cause an outbreak."

466
Chocano, José Santos. Oda celeste: el cometa de Halley. A José Enrique Rodo. El Figaro (Havana), año 26, mayo 15 de 1910: 232. port.
AP63.F5, v. 26

467
Chofardet, Pierre. Observations de la comète de Halley, faites à l'observatoire de Besançon (équatorial coudé de P. Gautier de 0^m,33 d'ouverture). Bulletin astronomique, t. 28, avril 1911: 124–130. illus. QB1.B9, v. 28
Observations made Dec. 10, 1909–June 29, 1910.
Also published in *Astronomische Nachrichten*, Bd. 188, Nr. 4489, 3. Apr. 1911, columns 1–6 (QB1.A77, v. 188).

468
Chree, Charles. Halley's Comet and magnetic and electrical phenomena. Nature, v. 83, May 26, 1910: 367–368. Q1.N2, v. 83

Letter to the editor.
Comments on observations made May 19–20 at Kew.

469
Christie, *Sir* William H. M. Halley's Comet 1909 c. Astronomische Nachrichten, Bd. 183, Nr. 4370/4371, 21 Nov. 1909: columns 47–48.
QB1.A77, v. 183
Positions based on photographs taken Sept. 9–Oct. 19 with the 30-inch reflector at the Royal Observatory, Greenwich.

470
Chu, Wên-hsin. Chung-kuo shih chih Ha-lei hui. *In his* T'ien wen k'ao ku lu. [Shang-hai] Shang wu yin shu kuan [1933] (Pai k'o hsiao ts'ung shu) p. 59–80.
QB15.C46 1933 Orien China
Provides information about 29 returns of Halley's Comet and also about its forthcoming visit in 1986. Relevant quotations from Chinese annals are given for all but the most recent appearances.

471
Ciampini, Giovanni G. Discorso tenuto nell'Accademia fisico-matematica di Roma in occasione della cometa apparsa il mese di agosto dell'anno 1682, ed osservazioni sopra di essa fatte in Roma 1682. Roma, 1686.

472
Cirera, Ricardo, *and* José Ubach. Observations sur le passage de la comète de Halley, à l'observatoire de l'Èbre (Espagne). *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 6 juin 1910: 1494–1495.
Q46.A14, v. 150
Also published, with a plate showing instrument tracings from 1400 GMT on May 17 through 1800 GMT on May 19, in the *Boletín mensual* del Observatorio del Ebro, v. 1. mayo de 1910, apéndice, p. i–ii (QC801.R63, v. 1).

473
Cirera, Ricardo, *and* Joaquín Pericás. Résumé des observations faites sur la comète de Halley, à l'observatoire de l'Èbre (Espagne). *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 13 juin 1910: 1576–1578.
Q46.A14, v. 150
Observations were made and photographs taken during the period May 1–June 6.
Also published in the *Boletín mensual* del Observatorio del Ebro, v. 1, mayo de 1910, apéndice, p. ii–iv (QC801.R63, v. 1).

474
Cisalpino, *Dott*. La cometa di Halley. L'Illustrazione italiana, anno 37, 16 genn. 1910: 63.
AP37.I4, v. 37

475
Cisneros, Francois G. de. Hablando con Camilo Flammarión: una interview, especial para "El Figaro." El Figaro (Havana), año 26, enero 23 de 1910: 37. port.
AP63.F5, v. 26
Halley's Comet and the end of the world are discussed.

476

Clairaut, Alexis C. [Letter, 1759 Aug. 16] 7717. Alexis Claude Clairault to Voltaire. *In* Voltaire, François M. A. de. Correspondence., Edited by Theodore Besterman. v. 37. Genève, Institut et musée Voltaire, 1958. p. 31.
PQ2084.A1 1953, v. 37

Accompanies copies of the author's report to the Académie des sciences on his calculations concerning the return of Halley's Comet, and his response to critical attacks upon it. Voltaire's reply, letter 7729, dated Aug. 27, appears (with annotations) on p. 49–52 of the same volume.

477

Clairaut, Alexis C. Lettre de M. Clairaut a messieurs les auteurs du Journal des sçavans. Journal des sçavans, dec. 1761, v. 2: 837–848.

In response to critical comment by d'Alembert on his solution of the three-body problem and its application to the theory of comets, as exemplified in his calculations for the 1759 return of Halley's Comet.

478

Clairaut, Alexis C. Memoire sur la cométe de 1759, dans lequel on donne les périodes qu'il est le plus à propos d'employer, en faisant usage des observations faites sur cette comète dans les quatre dernières apparitions. *In* Académie des sciences, *Paris.* Mémoires de mathématique et de physique, tirés des registres de l'Académie royale des sciences, de l'année M. DCCLIX. [A Paris, De l'Impr. royale, M. DCCLXV] p. 115–120.
Q46.A13, 1759

479

Clairaut, Alexis C. Mémoire sur la cométe de 1682 addressé à MM. les auteurs du Journal des sçavans. Journal des sçavans, jan. 1759: 38–45.

Read at a public session of the Académie royale des sciences on Nov. 14, 1758.

480

Clairaut, Alexis C. Nouvelles réflexions de M. Clairaut sur le sujet de la contestation qui s'est élevée entre M. d'Alembert & lui, à l'occasion de la comète de 1759. Pour servir de réponse au Mémoire inséré dans le Journal encyclopédique de février, vol. 2, p. 55. Journal des sçavans, juin 1762: 358–377.

481

Clairaut, Alexis C. Recherches sur la cométe des années 1531, 1607, 1682 et 1759, pour servir de supplement à la theorie, par laquelle on avoit annoncé en 1758 le tems du retour de cette cométe. St. Petersbourg, Impr. de l'Academie imperiale des sciences, 1762. 42 p. fold. plate.
CU; NN; NNC

482

Clairaut, Alexis C. Réponse de M. Clairaut à quelques piéces, la plûpart anonymes, dans lesquelles on a attaqué le Mémoire sur la comete de 1682: lû à l'assemblée publique de l'Académie des sciences, du 14 novembre 1758. Paris, M. Lambert, 1759. 22 p.
NN

A report on the pamphlet appears in *L'Année littéraire*, 1759, t. 5, lettre 9, p. 209–212.

483

Clairaut, Alexis C. Théorie du mouvement des comètes, dans laquelle on a égard aux altérations que leurs orbites éprouvent par l'action des planètes. Avec l'application de cette théorie à la comète qui a été observée dans les années 1531, 1607, 1682 & 1759. Paris, M. Lambert [1760] xiv, 247 p. plates. CSt; CU; DN-Ob; ICJ; NN; WU

Analytical reviews appear in *Histoire de l'Académie royale des sciences, année M. DCCLX*, p. 128–135 (A Paris, De l'Impr. royale, M. DCCLXVI. Q46.A13, 1760), and in *Mémoires pour l'histoire des sciences et beaux-arts*, juil. 1760, 1. v., p. 1714–1726 (AS161.T8, 1760).

484

Clark, B. A. J. The effect of a trans-Plutonian Planet on Halley's Comet. *In* Astronomical Society of Victoria. Journal, v. 25, Aug. 1972: 55–56. QB1.A4424, v. 25

Summarizes Brady's arguments.

In "The Hypothetical Tenth Planet of the Solar System," in v. 26, June 1973, p. 46–47, Clark reports the unsuccessful searches made for the planet and presents the opposing arguments of Goldreich and Ward, Seidelmann, Marsden, and Giclas, and others.

485

Classen, Johannes. Halley's Comet in 1682. Sky and telescope, v. 39, Feb. 1970: 102. facsim. QB1.S536, v. 39

The comet described in the broadside which is here reproduced and translated appeared at the beginning of the year and thus could not have been Halley's, which was first seen only in August. A letter from Cicely M. Botley, pointing this out and speculating that the date was a misprint for 1681, appears in the May issue, p. 298.

486

Claude, Georges. Sur la composition de l'atmosphère après le passage de la comète de Halley. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 150, 23 mai 1910: 1311–1312. Q46.A14, v. 150

Analyses were made May 17, 19, 20, and 23 at Boulogne-sur-Seine.

487

Clerke, Agnes M. [Second return of Halley's Comet] *In her* A popular history of astronomy during the nineteenth century. 2d ed. Edinburgh, A. & C. Black, MDCCCLXXXVII. p. 127–129. QB32.C61

488

Clüver, E. Geocentrischer Lauf des Halleyschen Cometen vom 12^{ten} Aug. bis 12^{ten} Novbr. Astronomische Nachrichten, 12. Bd., Nr. 281, 1. Juli 1835: columns 287–288. QB1.A77, v. 12

489

Co będzie gdy się kometa spotka z ziemią? Sosnowiec, M. Moszkowicz, 1910. 11 p.

490

Coggia, Jérôme E. Observations de comètes faites à l'observatoire de Marseille (équatorial d'Eichens de 0^m,26 d'ouverture). *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 149, 13 déc. 1909: 1109–1110. Q46.A14, v. 149

Halley's Comet: p. 1110. Observations were made Dec. 2–10.

Also published in *Bulletin astronomique*, t. 27, mai 1910, p. 160–161 (QB1.B9, v. 27).

491

Coggia, Jérôme E. Observations de comètes faites à l'observatoire de Marseille (équatorial d'Eichens de 0^m,26 d'ouverture). *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 149, 27 déc. 1909: 1349. Q46.A14, v. 149

Includes observations of Halley's Comet made Dec. 11 and 16.

Also published in *Bulletin astronomique*, t. 27, mai 1910, p. 160–161 (QB1.B9, v. 27).

492

Coggia, Jérôme E. Observations de la comète de Halley, faites à l'observatoire de Marseille (équatorial d'Eichens de 0^m,26 d'ouverture). *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 9 mai 1910: 1165–1167. Q46.A14, v. 150

Observations were made Apr. 16–May 6.

493

Coggia, Jérôme E. Observations de planètes et de comètes, faites à l'observatoire de Marseille (équatorial d'Eichens de 0^m,26 d'ouverture). Bulletin astronomique, t. 28 [illegible] 1911: 393–396. QB1.B9, v. 28

Halley's Comet: p. 394–395. Observations were made during Feb. 1–May 25, 1910. Comparison stars are listed on p. 396.

494

Coggia, Jérôme E. Observations de planètes et de la comète de Halley, faites à l'observatoire de Marseille (équatorial d'Eichens de 0^m,26 d'ouverture). Bulletin astronomique, t. 28, mars 1911: 91–93. QB1.B9, v. 28

Halley's Comet: p. 92. Observations were made during Jan. 4–17, 1910. Comparison stars are listed on p. 93.

495

Coggia, Jérôme E. Observations de planètes et de la comète de Halley, faites à l'observatoire de Marseille (équatorial d'Eichens de 0^m,26 d'ouverture). Bulletin astronomique, t. 29, jan. 1912: 41–44. QB1.B9, v. 29

Halley's Comet: p. 42. Observations were made during May 24–June 30, 1910. Comparison stars are listed on p. 43–44.

496

Comas Solá, José. El cometa de Halley. Hojas selectas, año 9, mayo 1910: 458–463. illus., port. AP60.H7, v. 9

497

Comas Solá, José. El cometa de Halley. La Ilustración artistica, año 29, 9 de mayo de 1910: 302–303. illus. AP60.I2, v. 29

498
Comas Solá, José. El cometa de Halley. *In* Sociedad Astronomica de España y América. Revista, año 1, mayo-jun., agosto de 1911: 17–21, 39–42, 65–68; año 2, oct. de 1912: 165–166. illus. QB1.U65, v. 1–2

499
Comas Solá, José. El cometa Halley. Su reaparición en 1910. Barcelona, Imp. A. López-Robert, 1910. 46 p.

500
Comas Solá, José. Estudio sobre el cometa de Halley. Barcelona, A. López Robert, 1910. 471–476 p. plates. (Memorias de la Real Academia de Ciencias y Artes de Barcelona. 3. época, v. 8, no. 23) AS302.B36, v. 8

Presented at the session of June 30, 1910.

Discusses observations made before and after conjunction. The plates reproduce photographs taken May 7, 30, and 31 and June 2.

"P.S. Nota sobre las velocidades y aceleraciones de una bocanada del cometa de Halley": p. 6–8. This note also appears, with a few slight changes, in *Astronomische Nachrichten*, Bd. 186, Nr. 4441, 16. Sept. 1910, columns 13–16 (QB1.A77, v. 186).

501
Comas Solá, José. Étude d'une touffe ou bouffée de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 1 août 1910: 369–371. Q46.A14, v. 151

On a phenomenon noted June 4–7.

502
Comas Solá, José. Observations de M. J. Comas Sola, à Barcelone. *In* Société astronomique de France. Bulletin, 24. année, sept. 1910: 395–396. QB1.S6, v. 24

Describes observations made May 31, June 1, June 2, and June 4.

503
Comas Solá, José. Résumé des observations physiques faites sur la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 20 juin 1910: 1659–1662. Q46.A14, v. 150

Observations were made during the period of the comet's maximum visibility.

504
Comas Solá, José. Sur la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 6 juin 1910: 1496. Q46.A14, v. 150

Describes phenomena noted May 31 and June 1, 2, and 4.

505
Combes, M. A. Les variations orbitales de la comète de Halley. Astronomie, 87. année, mars 1973: 103–112. illus. QB1.S6, v. 87

Discusses findings published by Brady and Carpenter and by Tao Kiang.

506

Combes, Michel. Infrared observations of Comet Halley. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 83–91. illus.

References (16): p. 90–91.

Discussion: p. 91.

507

The Comet. American magazine of useful and entertaining knowledge, v. 2, Dec. 1835, Feb. 1836: 156, 245. AP2.A366, v. 2 Rare Bk. Coll.

See also "The Comet's Influence" in the Nov. 1835 issue, p. 100.

508

The Comet. Army and Navy chronicle, v. 1, Oct. 1, 22, 1835: 315, 342. U1.A6, v. 1

Brief notes. The first, copied from the *New York American*, reports an observation made about 2 a.m. Sept. 19 by Prof. Anderson of Columbia College, who stated that the comet can now be seen with the naked eye. The second, copied from the *Schenectady Reflector*, quotes Prof. Joslin who announced that the comet has a second tail.

509

The Comet. *In* Burton, William E., *ed.* Burton's comic songster: being entirely a new collection of original and popular songs. Philadelphia, J. Kay, 1838. p. 63–64. M1628.B97

Words only.

510

The Comet. Gentleman's magazine, new ser., v. 4, Nov.–Dec. 1835: 536–537, 636. AP4.G3, n.s., v. 4

The first article comments on the bad weather which prevented regular observations and notes that the evening of Oct. 10 "was the first time when [the comet] became a conspicuous object to the naked eye." The second briefly describes Arago's report of a transient luminous sector in the head of the comet.

511

Comet. Guide to knowledge, v. 2, Oct. 31, 1834: 388. AP4.G84, v. 2

Quotes an August issue of the *New York Commercial Advertiser* as stating that "The Halley comet is now visible in the east, near the constellation *Taurus*," as well as a correcting letter to a Dublin paper pointing out that "the comet will not be visible to this planet previous to August, 1835 . . ." The New York paper's story can also be found, under the heading "The Halley Comet Visible in America," in the *Mechanics' Magazine*, v. 22, Oct. 11, 1834, p. 31 (T1.I38, v. 22).

Although a faint comet was seen in March and April of 1834, no explanation for this premature announcement has been found.

512

The Comet. Japan weekly mail, v. 53, Apr. 30, May 28, 1910: 679, 805. AP8.J5, v. 53

On observations by scientists and the general public in Tokyo.

513
The Comet. Japan weekly mail, v. 53, May 21, 1910: 788. AP8.J5, v. 53
Unsigned letter to the editor musing on the possible effects of the comet on the earth and its inhabitants.

514
The Comet. Literary digest, v. 40, May 28, 1910: 1071. illus. AP2.L58, v. 40
On the failure to occur of the sensational events predicted for the night of May 18. A photograph of the comet taken by Barnard on May 5 is reproduced.

515
[The Comet] London magazine; or, Gentleman's monthly intelligencer, v. 28, June 1759: 288. fold. plate. AP3.L7, v. 28 Rare Bk. Coll.
The plate gives a diagram of the solar system showing the comet's orbit, part of a celestial map on which the comet's path is indicated, and illustrations of a quadrant and a cometary telescope.

516
The Comet. Mechanics' magazine, v. 23, Sept. 5, 1835: 448. T1.I38, v. 23
An Irishman writing to the *Dublin Evening Mail* claims to have seen Halley's Comet with the naked eye on Aug. 17, while another "boasts of having seen two comets."

517
The Comet. Mechanics' magazine, v. 24, Jan. 23, 1836: 320. T1.I38, v. 24
Brief report of an observation made Dec. 31 at the observatory in Geneva.

518
The Comet. Saturday magazine, v. 7, Nov. 21, 1835: 195. AP4.S25, v. 7
Poem signed R. C. P.

519
The Comet. World's work, v. 20, May 1910: 12875. AP2.W8, v. 20

520
[The Comet and British politics] America, v. 2, Mar. 5, 1910: 564. BX801.A5, v. 2
The change in the composition of Parliament following an election in 1835 closely resembles the change that took place after the 1910 election. This parallel was first pointed out by A. C. D. Crommelin in the *Observatory*, v. 33, Feb. 1910, p. 105 (QB1.O2, v. 33), and repeated by H. H. Turner in his lecture to the Royal Institution of Great Britain on Feb. 18, 1910 (see item 2922). It is also noted in *Nature*, v. 82, Feb. 24, 1910, p. 499 (Q1.N2, v. 82).

521
The Comet and the slander. America, v. 1, Oct. 9, 1909: 689. BX801.A5, v. 1

Signed J. J. D. About the legendary actions against the comet ascribed to Pope Calixtus. Excerpts are published with comments under the title "The Pope and the Comet" in the *Literary Digest*, v. 39, Oct. 23, 1909, p. 678 (AP2.L58, v. 39).

522

The Comet and what we have learned. American review of reviews, v. 41, June 1910: 668–669. illus. AP2.R4, v. 41

A photograph shows "A comet party of New Yorkers on the roof of the Waldorf-Astoria . . . on the morning of May 18."

523

The Comet as a puzzle. Outlook, v. 95, May 28, 1910: 133–134. AP2.O8, v. 95

On "the erratic actions of our interesting visitor from far space."

524

The Comet at sea. *In* Astronomical Society of Wales, *Cardiff*. Cambrian natural observer. 3d ser., v. 1; 1910. Cardiff, Printed by Evans & Williams, 1911. p. 13–16. QB1.A45, 1910

Letters from Capt. J. Netherclift Jutsum, F.R.A.S., aboard the S.S. *Maywood*, en route from Cardiff to Les Sables d'Olonne, and Capt. Berry, of Penarth, aboard the S.S. *Tantallon*, in the South Atlantic.

525

The Comet breeding dissensions. Literary digest, v. 40, Apr. 23, 1910: 805–806. illus. AP2.L58, v. 40

On the conflicting views about the comet expressed in books and journal articles.

526

Comet causes suicide. Observatory, v. 33, Apr. 1910: 190. QB1.O2, v. 33

Report originating in Budapest and copied from *St. James's Gazette* for Mar. 9 on the suicide of a Hungarian landowner, preferring death by his own hand "to being killed by a star."

527

A Comet coming. Every where, v. 25, Oct. 1909: 97. AP2.E94, v. 25

528

The Comet did it. Honey jar, v. 15, May 1910: 24. AP2.H78, v. 15

Poem.

529

Comet Halley: a program and a fund. Sky & telescope, v. 62, July 1981: 22. illus. QB1.S536, v. 62

On plans for the International Halley Watch, and the Halley Fund, contributions to which will be used "to support a portion of a United States mission, should one be approved by Congress" or, if such a mission is not funded, "to aid American scientists working with Giotto, a probe sponsored by the European Space Agency."

530
The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. [Compiled by B Battrick & E Swallow] Paris, European Space Agency, 1981. 85 p. illus. (ESA SP–174)

NASA accession no. N82–23095.

Includes bibliographic references.

The cover design is an artist's impression of the Halley comet nucleus, by Ken Hodges.

All but one of the constituent papers are separately listed in this bibliography.

531
Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Comet Halley Micrometeoroid Hazard Workshop. Proceedings of an international workshop sponsored by the European Space Agency, held in ESTEC, Noordwijk, The Netherlands, 18–19 April 1979. [Edited by Norman Longdon] Paris, European Space Agency, 1979. 147 p. illus. (ESA SP–153)

NASA accession no. N80–22200.

Includes bibliographic references.

All but two of the 19 constituent papers are separately listed in this bibliography.

532
Comet Halley photographed May 19, 1910 at Lowell Observatory. [Tucson?] Kitt Peak National Observatory, 1978. col. poster 53 × 41 cm.

"Computer enhancement and color produced by the picture processing lab of the Kitt Peak National Observatory."

533
Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80 in the Max-Plank [sic] -Institut für Kernphysik, Heidelberg, and ESTEC, Noordwijk, The Netherlands. [Edited by Norman Longdon] Paris, European Space Agency, 1981. 102 p. illus. (ESA SP–155)

NASA accession no. N81–34113.

Includes bibliographic references.

An introduction by Rüdeger Reinhard appears on p. 1–5, with illustrations and two references. The constituent papers are separately listed in this bibliography.

534
Comet Halley recovered. Astronomy, v. 11, Jan. 1983: 60. illus.
QB1.A7998, v. 11

See also Richard Berry's note, "The Comet is Coming!" on p. 33 of this issue.

535
Comet Halley Science Working Group. Scientific rationale and strategies for a first comet mission: report of the Comet Halley Science Working Group. [n.p., National Aeronautics and Space Administration] 1977. [91] p. illus. (NASA TM–78420)
Sci RR

NASA accession no. N77-29043.

Defines a set of instruments and their scientific objectives for a mission to Halley's Comet during its 1985/86 apparition. Various types of mission—fast flyby, slow flyby, or rendezvous—are considered.

"Appendix A. A First Step to a Physical Model of Comet Halley," by Ray L. Newburn and Donald K. Yeomans: p. [65]-[77]

"Appendix B. The Apparition of Comet Halley in 1986 as it Is Expected To Be Seen From Earth Including an Ephemeris," by Donald K. Yeomans: p. [78-[91] The ephemeris covers the period Oct. 1, 1984-Nov. 30, 1986.

A nine-page *Executive Summary* (NASA accession no. N77-29044) of the report was also issued.

536
Comet Halley watch network formed. COSPAR information bulletin, no. 95, Dec. 1982: 60-61. TL787.C2, 1982

"NASA News Release No. 82-[illegible] of 23 August 1982."

537
The Comet hunters. Astronomy, v. 8, Feb. 1980: 26, 28. illus. QB1.A7998, v. 8

An interview "with Laurel Wilkening, of the University of Arizona, and Joe Cork, of the Jet Propulsion Laboratory, about NASA's proposed comet Halley/Tempel 2 mission."

538
The Comet is coming! Discover, v. 2, Sept. 1981: 10. illus. Q1.D57, v. 2

"The U.S. is missing the boat to Halley's Comet." The illustration, a cartoon by Sidney Harris, shows the comet, a large spacecraft labeled U.S.S.R., and a TV camera mounted on a kite marked U.S.A.

539
Comet mission hits a snag. Science news, v. 116, Dec. 15, 1979: 407. Q1.S76, v. 116

The mission "may have to be scrapped, a victim of close-cut budgets."

540
Comet notes. Scientific American, v. 102, May 21, 1910: 416. illus. T1.S5, v. 102

Summarizes a variety of news and scientific reports. The illustration reproduces a photograph of the comet taken by Barnard on May 5.

541
The Comet of Halley. English mechanic and world of science, v. 56, Oct. 21, 1892: 205-206. T1.E5, v. 56

Signed C. M. D.

542
The Comet of the Bayeux tapestry. Nature, v. 15, Dec. 7, 1876: 126. Q1.N2, v. 15

"There can now remain very little doubt that the grand comet which astonished Europe in the year of the Norman Conquest ... was the famous body which now bears universally the name of our countryman Halley."

543
Comet on post card. American stationer, v. 67, May 28, 1910: 26.
TS1228.A5, v. 67

In a conversation on the elevated in New York, a young man regrets the failure to produce any comet postcards. "Think of the lost opportunities!"

544
Comet photography. Amateur photographer & photographic news, v. 51, Jan. 11, 1910: 28.
TR1.A4, v. 51

Notes that the Astronomical and Astrophysical Society of America is soliciting cooperation in making photographic records of Halley's Comet.

545
[Comet promotes trade] Popular mechanics, v. 14, July 1910: 24.
T1.P77, v. 14

A note reporting a boom in the sale of telescopes and binoculars.

546
Comet Science Working Group. Report. [Washington? National Aeronautics and Space Administration, 1979] 131 p. illus. (NASA TM–80543)
Sci RR

NASA accession no. N79–30125.

"... recommends that the first mission of NASA's comet program be a Halley Flyby/Tempel 2 Rendezvous mission."

A 13-page *Executive Summary* (NASA accession no. N79–30124) of the report was also issued.

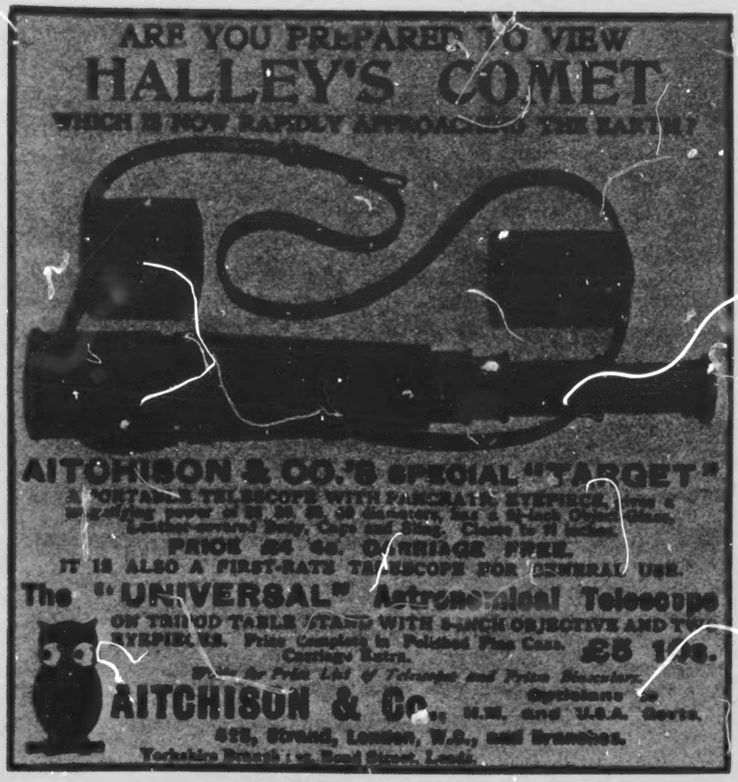
547
Comet Science Working Group. Report on the Halley Intercept Mission. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1980. 19 p. illus. (NASA TM–82386)
Sci RR

NASA accession no. N81–20100.

"While the Comet Science Working Group believes that the scientific return from the 1986 Halley apparition can be enhanced significantly by coordinating all efforts to study this comet, and consequently strongly endorses the International Halley Watch Program, the CSWG has concluded that the Halley Intercept Mission represents the single indispensable element of this world-wide effort."

548
The Comet! Shall we see it in May? Saturday evening mail, Mar. 26, 1910: 4. illus.
AP2.S17, 1910

A short article accompanied by pictures of five earlier comets and a small illustration entitled "Watching for Halley's Comet in 1758. From an Old Wood Cut."



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Yorkshire Branch: 37, Bond Street, Leeds.

Telescope suppliers did well during the comet's last visit. This advertisement appeared in the *Graphic*, v. 81, Apr. 2, 1910, p. 481.

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549
Comet space mission in deep trouble. Comet news service, Jan, 5, 1980: 1, 4.
DN-Ob

550
[Comet that came in eighty-two] Gentleman's magazine, v. 28, Oct. 1758: 487.
AP4.G3, v. 28 Rare Bk. Coll.

Poem, signed J. G.

551
A Comet that comes back. Mentor, v. 9, Oct. 1921: 29. illus.
AP2.M417, v. 9

The illustration shows the comet, Venus, and an old moon low in the predawn sky of early May 1910, over a wooded horizon; all are reflected in a foreground lake.

552
Comet trekking: Halley's heavenly body returns. Time, v. 120, Nov. 1, 1982: 69. illus.
AP2.T37, v. 120

Using a charge-coupled device with the 200-inch Hale reflector on Palomar Mountain, "a Caltech team led by British Graduate Student David C. Jewitt, 24, and Staff Astronomer G. Edward Danielson, 43," detected the comet on the night of Oct. 15/16. The search for the comet began at this observatory in November 1977.

553
El Cometa de Halley. *In* Sociedad Astronómica de Barcelona. Boletín, año 1, agosto/set. 1910: 25–28. illus.
QB1.S54, v. 1

Summarizes reports of observations from several countries.

554
El Cometa de Halley. *In* Sociedad Astronómica de México. Boletín mensual, t. 9, marzo-abr., jun., agosto de 1910: 81–82, 91–92, 157–159, 195–196. illus.
QB1.S55, v. 9

The first of these short articles is signed L. G. L. (Luis G. León); all but the second include ephemerides.

555
El Cometa de Halley es ya visible con pequeños telescopios. *In* Sociedad Astronómica de México. Boletín mensual, t. 9, feb. de 1910: 37–39.
QB1.S55, v. 9

556
O Cometa de Halley photographado em Lisboa. Illustração portugueza, 23 de maio 1910: 671–672. illus.
AP65.I6, 1910

Another photograph appears in the issue of 16 de maio, p. 630, under the heading "O Cometa de Halley approxima se da terra."

557
La Cometa di Halley. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 3, ott. 1909: 411–413; anno 4, genn., apr.–giugno 1910: 41–43, 186–187, 188, 236, 287.
QB1.S57, v. 4

LC holds only v. 4.

News notes (sometimes under a different heading) dealing with such topics as the recovery of the comet and early observations, photographs and spectrograms, the comet's luminosity, its expected transit across the solar disk, and the possibility of a meteor shower at some time near May 19. See also the note in the sett. 1909 issue, p. 376, announcing Wolf's recovery and giving the comet's position and magnitude as of Sept. 11, and the folded chart by Vittorio Fontana in the apr. 1910 issue, following p. 184, entitled "Cammino percorso apparentamente in cielo dalla Cometa di Halley dal 12 settembre 1909 al 21 maggio 1910."

558

La Cometa di Halley e Papa Calisto III. La Civiltà cattolica, anno 61, 5 febbr. 1910: 257–274.

Bibliographic footnotes.

Briefly summarized in *America*, v. 2, Mar. 5, 1910, p. 567 (BX801.A5, v. 2).

559

El Cometa esperado. Caras y caretas, año 13, 19 de feb. de 1910: [26], [28] illus. AP63.C27, 1910

560

Cometa gentil . . . Pica-pica, año 3, 21 de mayo 1910: 4. AP63.P55, v. 3

Poem, signed Otro.

561

El Cometa Halley. La Ilustración sud americana, año 18, 15 de feb. de 1910: 34. AP63.I3, v. 18

562

El Cometa Halley: observaciones, estudios y comparaciones. Nuevo mundo, año 17, 19 mayo 1910: [10]–[11] illus. AP60.N87, v. 17

Includes reproduction of a photograph taken at the Madrid observatory. See also "La Tierra y el cometa Halley," on p. [12], reproducing the Rudaux diagram.

563

Cometary evidence of a planet beyond Pluto. Science news, v. 101, May 6, 1972: 293. Q1.S76, v. 101

On Brady's hypothesis. Followup stories appear under the headings "Fruitless Search for Tenth Planet," in v. 102, Oct. 14, 1972, p. 248, and "On Not Finding Planet X . . ." and ". . . And the Theoretical Case Against It" in v. 102, Nov. 25, 1972, p. 344.

564

The Cometary system.—The comet of 1835. Magazine of popular science, and journal of the useful arts, v. 1, Apr. 1836: 242–250. illus.
Micro 39323

Excerpts were published in the *Journal* of the Franklin Institute, v. 22, Oct. 1836, p. 282–284 (T1.F8, v. 22).

A short note, "Aspect of Halley's Comet," reporting observations made by Bessel on Oct. 12, 1835, appears in the Feb. 1836 issue of the *Magazine of Popular Science*, p. 136.

565
Le Comete. *In* Almanacco italiano. Anno 16; 1911. Firenze, R. Bemporad. p. 14–21. illus. AY894.I8, 1911

Deals almost exclusively with Halley's Comet and reproduces sketches made Feb. 6 and 7, Apr. 28, May 13, 28, 29, 30, and 31, and June 6, 1910, by Mentore Maggini. A table lists 29 previous appearances of the comet.

566
La Comete. Journal des sçavans, 31. aoust 1682: 188–189.

Reports that the comet was first seen, "au-dessus de la tête des Gemeaux," on the night of Aug. 23 by the Jesuit fathers of Orleans and at the Royal Observatory in Paris on Aug. 25.

Published also in the Amsterdam issue of the same date, p. 340–341 (AP25.J7, 1682).

567
La Comète a-t-elle rencontré la terre? *In* Société astronomique de France. Bulletin, 24. année, juin 1910: 270. QB1.S6, v. 24

Brief note indicating that no significant phenomena were recorded during the night of May 18/19 and the morning of the 19th.

568
Comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 7 sept. 1835: 96–97. Q46.A14, v. 1

Reports remarks made by Arago and S. D. Poisson on the position of the comet, the relative accuracy of various ephemerides, and reasons for the discrepancies among them.

Preceding this article, under the heading "Comètes," is a brief notice of a letter from Boguslawski, announcing his observation of the comet on Aug. 21.

The paragraph on Boguslawski's observation and extracts from the longer notice that follows are reprinted in Arago's *Œuvres complètes*, t. 11, p. 483–485 (Paris, Gide, 1859. Q113.A75, v. 11).

569
Comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 21 sept. 1835: 129–131. Q46.A14, v. 1

Reports a new calculation of the date of perihelion by M. de Pontécoulant, Arago's account of the most recent observations made at Paris, and the latter's analysis of a letter from Benjamin Valz describing his observations at Nîmes and presenting the elements he derived from them.

Reprinted in Arago's *Œuvres complètes*, t. 11, p. 485–488 (Paris, Gide, 1859. Q113.A75, v. 11).

570
Comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 2, 18 jan. 1836: 67–68. Q46.A14, v. 2

An excerpt from a letter to Poisson from Bessel, describing a luminous cone observed to be emerging from the comet during mid-October, is quoted and discussed.

571
Comète de Halley. *In* Académie royale des sciences, des lettres et des beaux-arts de Belgique, *Brussels*. Bulletin, t. 2, no 9, 11, séance du 10 oct., du 5 déc. 1835: 324–326, 368–369; t. 3, no 2, 5, séance du 6 fév., du 6 et du 7 mai 1836: 36–37, 147–156. AS242.B31, v. 2–3

All but the second of the four reports, communicated by M. Quetelet, include extracts of letters from Wartmann in Geneva; one comments on observations of the comet at Paris and Geneva in 1759, one describes the comet's appearance in Jan. 1836 at Geneva, and one discusses calculations of the exact time of perihelion passage; the last is accompanied by a table with data from observations made Aug. 21–Nov. 17, 1835, at Vienna and Padua. The second report (5 déc. 1835) gives the elements of the comet's orbit as used by Stratford and Rosenberger in calculating their ephemerides.

A very brief note in t. 1, no 27, séance du 6 déc. 1834, p. 198, reports the presentation to the academy by M. Quetelet, presiding, of a celestial chart published by van der Maelen showing the comet's path during 1835–36, with its distances from the earth and the sun, based on the ephemeris published in the *Nautical Almanac* for 1835.

572
La Comète de Halley. *In* L'Année scientifique et industrielle. 54. année; 1910. Paris, Librairie Hachette, 1911. p. 41–50. illus. Q9.A3, v. 54

573
La Comète de Halley. Bibliothèque universelle, t. 56, nov. 1909: 432. AP24.B5, v. 56

573a
La Comète de Halley. Cosmos, t. 61, 2 oct., 6, 20 nov., 18–25 déc. 1909: 363, 503, 559, 671, 699; t. 62, 22 jan., 19–26 fév., 12–19 mars, 23–30 avril, 14–28 mai 1910: 85, 197, 225, 281, 309, 449–450, 477–478, 533–534, 561–562, 589–590; t. 63, 10 déc.: 645.

News notes of varying length and under various titles.

574
La Comète de Halley. Cosmos, t. 61, 16 oct. 1909: 425–426. illus.

Includes brief history of the comet, quotes a report from the *Gazette astronomique*, and provides an excerpt from the Cowell-Crommelin ephemeris for Oct. 4–Nov. 23, 1909.

575
[La Comète de Halley] L'Echo du monde savant, 1. année, 10 oct. 1834: 111; 2. année, 24 avril, 28 août, 11–25 sept., 23 oct., 7–13 nov. 1835: 255, 361, 373–374, 377, 386, 409, 421, 425; 3. année, 21 jan., 11–18 fév., 19 mai, 9 nov. 1836: 9–10, 25–26, 29, 85, 187. AS161.E3, v. 2–3

LC lacks issue of 10 oct. 1834.

576
La Comète de Halley. Gazette astronomique, 3. année, no 25, 27/28–29/30, 31 déc. 1909, 28 [fév.]–29 avril 1910: 2, 21–22, 25–26. illus. QB1.G3, v. 3

Includes ephemerides for Dec. 26, 1909–Feb. 14, 1910; Feb. 14–May 10; and May 2–July 31. A diagram in the third part shows the comet's path in the sky from the end of April until Aug. 5.

577
La Comète de Halley. La Nature, 37. année, 27 nov. 1909, suppl.: 201. Q2.N2, v. 37.2

News of observations made at some of the large observatories. Includes an ephemeris, at 5-day intervals, for Dec. 1909.

578
La Comète de Halley. Revue des questions scientifiques, t. 68, oct. 1910: 666–670. Q2.R45, v. 68

Summary by C. G. of published observations made on the night of May 18/19, as well as general comments on the 1910 return of the comet.

579
La Comète de Halley. Revue étrangère de la littérature, des sciences et des arts (Saint-Pétersbourg), t. 15, 10 sept. 1835: 538–539. AP20.R5, 1835

580
La Comète de Halley. *In* Société astronomique de France. Bulletin, 23. année, juil., nov.–déc. 1909: 336–337, 505, 557; 24. année, mars, oct. 1910: 143–144, 459; 25. année, jan., juin–juil. 1911: 36, 264, 321. illus. QB1.S6, v. 23–25

News notes. The first gives the comet's elements, the second reports the recovery (reproducing Wolf's photograph), the third includes revised elements and an extract from the ephemeris published in *Astronomische Nachrichten*, Nr. 4359, the fourth reproduces a photograph taken Jan. 30, 1910, at Juvisy by Quénisset and reports observations made in late January and early February by three members of the society in France, the fifth concerns itself with fixing the date of transit by noting reports of the comet's appearance after sunset, and the last three report on observations of the retreating comet in November and December 1910 and April 1911, made at the Algiers, Helwan, and Yerkes observatories.

581
Comète de Halley. *In* Société belge d'astronomie. Bulletin, 14. année, mars, sept./oct.–déc. 1909: 139, 420–422, 491, 533–534. QB1.S[illegible], v. 14

News notes, the second and fourth of which are signed E. D. (Eugène Delporte). The first reports the unsuccessful search for the comet at Yerkes Observatory; the second reports the recovery and gives Crommelin's revised ephemeris for Oct. 27–Dec. 26, 1909; the third tells of visual and spectrographic observations, and the fourth discusses the comet's luminosity and its probable transit across the sun's disk on May 18, and gives Crommelin's revised ephemeris for Dec. 31, 1909–Apr. 5, 1910.

582
La Comète de Halley amènera-t-elle la fin du monde? Lectures pour tous, 12. année, avril 1910: 620–625. illus. Micro 07637

See also "Pour bien voir la comète! Dessins de Heath Robinson et Radcliffe Wilson," two cartoons on p. 648–649 of this issue.

583
La Comète de Halley en 1835. *In* Société astronomique de France. Bulletin, 24. année, mars 1910: 146–147. QB1.S6, v. 24

Includes the text of a letter to Flammarion from Gen. Théodore Parmentier, describing the comet as he saw it at the age of 14. The recollections of William Todd (see item 2901) are summarized, and Lewis Swift is also mentioned as one who saw the comet at its last apparition.

A similar article with the same title appears in *La Nature*, 38. année, 19 mars 1910, suppl., p. 121 (Q2.N2, v. 38.1).

584
La Comète de Halley et ce qu'on dit. Bibliothèque universelle, t. 58, mai 1910: 436–437. AP24.B5, v. 58

585
La Comète de Halley (notes). Ciel et terre, 30. année, 1.–16. déc. 1909, 16. jan.–16. fév. 1910: 471, 493, 544–545, 569, 586–587. QB1.C5, v. 30

The third item includes an ephemeris for the period Jan. 5–Feb. 24.

586
La Comète de Halley: observations de la rotation du noyau. *In* Société astronomique de France. Bulletin, 24. année, déc. 1910: 549. QB1.[illegible], v. 24

Brief report on the work of Anatole Jamain, who, in studying his own and others' observations of the nucleus, which from time to time appeared to be split, concluded that a rotation period for the nucleus of 21 hours and 20–30 minutes would agree well with observations.

587
La Comète de Halley observée à Uccle. Gazette astronomique, 2. année, no 23, 30 oct. 1909: 87. QB1.G3, v. 2

Observation made Oct. 14 by G. Van Biesbroeck using the 38 cm equatorial.

588
La Comète de Halley pendant sa récent apparition. Gazette astronomique, 3. année, no 31/32, 30 juin 1910: 33–34. QB1.G3, v. 3

Includes reports from P.-L. Dupont at Hoboken, Félix de Roy at Antwerp, Van Biesbroeck at Uccle, and R. H. Garrido at Granada.

589
Comète de Halley, qui paraîtra en 1835. Magasin pittoresque, t. 3, livr. 11, [14 mars] 1835: 88. map. AP2[illegible].M3, v. 3

590
La Comète de Halley: son éclat augmente rapidement. Gazette astronomique, 2. année, no 24, 30 nov. 1909: 95. QB1.G3, v. 2

Includes ephemeris for Nov. 26–Dec. 26.

591
[Comète de l'année 1682. reparoit, suivant la prédiction du célebre Chevalier Newton] Mercure historique et politique, t. 146, avril–may 1759: 416–418, 550–551, 565–566. D1.M4, v. 146

The first two reports appear in the section entitled "Nouvelles de France" and the third, in "Nouvelles de la Grande-Bretagne."

592
Comète 1909 c (Comète de Halley). *In* L'Année scientifique et industrielle. 53. année; 1909. Paris, Librairie Hachette, 1910. p. 60–66.
Q9.A3, v. 53

593
La Comète P/Halley a déjà été retrouvée! Ciel et terre, v. 98, nov./déc. 1982: 300.
QB1.C5, v. 98

594
Les Comètes et la comète de Halley. La Nature, 38. année, 23 avril 1910: 321–336. illus.
Q2.N2, v. 38.1

Contents: [Introduction].—Mascart, Jean. L'importance historique de la comète de Halley.—Rudaux, Lucien. Les comètes: leurs orbites—leur nature.—Touchet, Émile. La grande comète 1910 *a*.

A revised and enlarged version of Mascart's contribution, with many of the same illustrations, forms a chapter in his book, *Impressions et observations dans un voyage à Tenerife* (see item 2027).

595
Cometic reflections. *In* Los Angeles times. Illustrated weekly magazine, v. 15, June 5, 1910: 797.
AP2.L815, v. 15

Editorial.

". . . we may be sure that this last visit of the comet will leave more brilliant reflections behind it than any previous one." See also "Nature's Mysteries," an editorial in the issue of Apr. 17, p. 483, musing on how little is known about comets in general and Halley's Comet in particular.

596
The Comets and unrest. Chinese recorder and missionary journal, v. 41, Feb 1910: 130–131.
BV3410.C6, v. 41

Urges missionaries to counteract the efforts of unprincipled schemers to use the appearance of the comets to incite disturbances among the population.

597
Comets in a storm: tight money for space. Science news, v. 117, Feb. 16, 1980: 101–102.
Q1.S76, v. 117

Tells of protests from the scientific community against the deletion, for budgetary reasons, of the Halley/Tempel 2 comet mission from the space program.

598
The Comet's odour. *In* Astronomical Society of Wales, *Cardiff*. Cambrian natural observer. 3d ser., v. 1; 1910. Cardiff, Printed by Evans & Williams, 1911. p. 16.
QB1.A45, 1910

Residents of Cardiff noticed strong odors ("like old boots burning") during the night that the earth was to pass through the comet's tail.

599
Comets on the sun. Griffith observer, v. 27, Dec. 1963: 145–149. illus.
QB1.G7, v. 27

Chiefly concerns Ellerman's attempt to observe the transit of Halley's Comet on May 18, 1910, from Diamond Head, near Honolulu.

600
Comets used to be feared and unwelcome visitors. Wisconsin then and now, v. 20, Dec. 1973: 2–3. illus. F576.W825, v. 20

A review of the reception of Halley's Comet in Wisconsin in 1910, prompted by the appearance of Comet Kohoutek. A furniture ad for "seats for comet gazers" and a cartoon entitled "Comet Parties Are Now All the Rage" are reprinted from local newspapers of the day, and a recipe for a 1910 "Comet Cocktail" is given. A panel of the Bayeux Tapestry is reproduced on the cover of the issue.

601
Comiers, Claude. La natvre et presage des cometes. Ouvrage mathematique, physique, chimique & historique; enrichi des propheties des derniers siecles, et de la fabriqve des grandes lvnetes. A Lyon, Chez C. Mathevet, M. DC. LXV. [24], 352, cccliij–ccclxiv, 353–499, [47] p. illus. MH; NN; WU

The following appearances of Halley's Comet are treated:
66: p. 214–215;
684: p. 235;
837: p. 240;
1066: p. 249;
1301: p. 257–258;
1456: p. 273–275;
1531: p. 302–303; and
1607: p. 340–342.

602
The Coming of Halley: the world readies. Science news, v. 117, Mar. 15, 1980: 167–168. Q1.S76, v. 117

Reports plans for space probes proceeding in Western Europe, Japan, and the Soviet Union and for an "International Halley Watch" to coordinate ground-based observations by professionals and amateurs.

603
The Coming of the comet. Observatory, v. 32, Oct. 1909: 409–410. QB1.O2, v. 32

Poem, signed Touchstone. Copied from the *Daily Mail* of Sept. 15.

604
[Comparisce una cometa, che si crede quella predetta dal Wiston, e dall'Halley] *In* La Storia dell'anno MDCCLIX. pt. 1. Amsterdam, A spese di F. Pitteri librajo in Venezia [1759?] p. 310–312.

605
Comstock, George C. The passage of Halley's Comet, May 18. Popular astronomy, v. 18, June/July 1910: 370. QB1.P8, v. 18

Brief report of observations made at the Washburn Observatory, Madison, Wis.

606

Concerning the comet. Collier's, v. 45, May 7, 1910: 13. illus. AP2.C65, v. 45

The illustrations consist of an orbit diagram and a drawing that shows how a comet's spectrum is recorded.

607

Conroy, Charles C. Pope Calixtus III and Halley's Comet. Los Angeles, 1910. 28 p.

608

Cook, Anthony. Comet Halley update. Griffith observer, v. 47, Feb. 1983: 8–9. illus. QB1.G7, v. 47

References (5): p. 9.

The cut in the Nuremberg Chronicle that represents the 684 appearance of the comet is featured on the cover of the issue.

A brief note headed "Halley's Comet Is Back!" on the Oct. 16, 1982, recovery of the comet, with the image, appears in the Jan. 1983 issue, p. 14.

609

Cooke, Robert. Race is on for early look at Halley's comet. Boston Sunday globe, v. 221, Feb. 14, 1982: 76. illus. N&CPR

Comments from Brian Marsden on the searches being conducted at observatories in Arizona, California, Hawaii, and elsewhere.

610

Cooke, William E. Halley's Comet: transit across the sun, 1910 May 18. *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 614. QB1.R7, v. 70

A negative report from Perth, W. A.

611

Cooper, Edward J. Cometic orbits, with copious notes and addenda. Dublin, A. Thom, 1852. 196 p. QB722.C7

The following appearances of Halley's Comet are described (Cooper regarded as well-ascertained only those from 1456 on):

371 B.C., p. [61];
11 B.C., p. 63–64;
A.D. 66, p. 64;
A.D. 451, p. 64;
A.D. 760, p. 65;
A.D. 837, p. 66;
A.D. 1066, p. 66–67;
A.D. 1301, p. 68–69;
A.D. 1378, p. 70;
A.D. 1456, p. 71;
A.D. 1531, p. 73;
A.D. 1607, p. 77;
A.D. 1682, p. 85–86;
A.D. 1759, p. 98–99; and
A.D. 1835, p. 156.

The catalog (p. 14–59) lists orbital elements and gives brief references to the sources in which the orbits were first published.

612

Cooper, Edward J. [Halley's Comet. n.p., 183–?] folder ([3] p.) illus. DN-Ob

DN-Ob copy has *Observations of Donati's Comet* ([Dublin, Printed by A. Thom, 1859] 13 p. plates), by Edward J. Cooper and Andrew Graham, laid in.

The first page is blank; the text is on the second page, and on the third is a sketch of the comet as seen on Oct. 22 and 24, 1835, in Cooper's telescope at Markree Castle, Collooney, Ireland.

613

Cooper, Edward J. Observations on Halley's Comet, made at Mackree [sic], Sligo, in the months of August, September, October and November 1835. *In* Royal Society of London. Proceedings, v. 3, no. 22, 1835: 346–347. Q41.L7, v. 3

Abstract of a paper communicated by Capt. Beaufort, R.N., on Nov. 26, 1835.

614

Cooper, Edward J. Schreiben des Herrn Edward Cooper M.P. an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 317–318. QB1 [illegible] v. 12

In English.

Describes his observations of the comet made early on Aug. 26 at Markree, Collooney, Ireland.

615

Copetas, A. Craig. Networks jockeying for shuttle seat to cover comet. TV guide, v. 30, Nov. 13, 1982: A-3. Micro

"The three networks are already standing in line at the ticket window, hoping to get a seat on the space shuttle in 1986 … NASA says that there is 'a strong possibility' that a TV reporter will be sent up to cover the comet."

616

Coradini, M., E. Flamini, P. Hurren, G. Martelli, *and* P. N. Smith. The effects of microparticle hypervelocity impacts on polished surfaces: tests for the choice of the Halley multicolour camera. *In* NATO Advanced Study Institute, *Isola Vulcano, Italy, 1981*. The comparative study of the planets; proceedings of the NATO Advanced Study Institute held at Vulcano (Aeolian Islands), Italy, September 14–25, 1981. Edited by Angioletta Coradini and Marcello Fulchignoni. Dordrecht, Boston, D. Reidel Pub. Co. [1982] (NATO advanced study institutes series. Series C, Mathematical and physical sciences, v. 85) p. 367–387. illus. QB600.N37 1981

References (3): p. 387.

"In order to test the response to hypervelocity impacts of materials to be used in the construction of the mirror to be flown on the ESA GIOTTO probe as part of the multicolour camera which will image the Halley comet, we have bombarded reflecting surfaces with quartz particles of $10^{-6} - 10^{-7}$ gr travelling at velocities well in excess of 8 km/sec … We have found that nickel plated aluminium mirrors are the most resistant to hypervelocity impacts, but their optical properties may be destroyed more rapidly than those of the polished Al mirrors, because of the irregular morphology of the crater rims."

617
Córdoba, Argentine Republic. Observatorio Astronómico. Observaciones del cometa Halley durante su aparicion en 1910, su posicion, brillantez, espectro, etc., hechas en el Observatorio Nacional Argentino por Carlos Dillon Perrine . . . con la asistencia de . . . Roberto Winter, Federico Symonds y Ana E. Glancy. Apendice (Cometa Mellish). Córdoba, Publicado por el Observatorio, 1934. 108 p. 57 plates. (*Its* Resultados, v. 25)
QB4.C79, v. 25

Spanish and English.

Contains a beautifully reproduced series of photographs of the comet taken during the period April 17–July 6, 1910.

618
Corrêa de Oliveira, Antonio. Jesus dos mundos (visão do cometa de Halley). Illustração portugueza, 14 de março de 1910: 321–325. illus.
AP65.I6, 1910

Poem, with decorations by Antonio Carneiro.

619
Cortie, Aloysius L. "The Devil, the Turk, and the Comet." Observatory, v. 33, Feb. 1910: 91–95. QB1.O2, v. 33

On the legend that Pope Calixtus III anathematized Halley's Comet at its 1456 appearance. A letter to the editor from W. T. Lynn commenting on this article appears in the Mar. 1910 issue, p. 140.

620
Costogue, E. N., *and* G. J. Rayl. Ultralow-mass solar-array designs for Halley's Comet rendezvous mission. *In* Intersociety Energy Conversion Engineering Conference, *13th, San Diego, Calif., 1978*. Proceedings. v. 2 of 3. Warrendale, PA, Society of Automotive Engineers [1978] p. 1575–1581. illus. TJ163.9.I54 1978, v. 2

". . . describes the conceptual design study results on photovoltaic arrays capable of powering a Halley's comet rendezvous mission. This mission would be shuttle-launched, employ a unique form of propulsion (ion drive) which requires high power levels for operation, and operate at distances between 0.6 and 4.5 AU. These requirements make it necessary to develop arrays with extremely high power to mass ratios (200 W/kg)."

621
Cotton, Charles. "The hairy star"—Halley's Comet in the twelfth century; date of Canterbury Psalter. Times (London), June 6, 1934: 15. N&CPR

Letter to the editor, suggesting that the drawing of a comet in the psalter may be a contemporary sketch of the 1145 apparition of Halley's Comet. See also the fourth leader entitled "The Canterbury Comet," on the same page.

622
Could the earth collide with a comet? Scientific American, v. 102, Mar. 5, 1910: 194. T1.S5, v. 102

The Canterbury Psalter, an illuminated manuscript dating from the mid-12th century, is the work of the scribe Eadwine, a monk of Christ Church Priory, Canterbury. Preceding each psalm are illuminations that relate to the text, which is given in three Latin versions, with French and Anglo-Saxon translations and Latin commentary. Folio 10, on which Psalm V begins, also has a drawing of a comet with an Anglo-Saxon inscription; there is nothing comparable elsewhere in the volume. It is thought that the scribe added this sketch because a comet appeared while he was completing the page. In 1934, when a facsimile edition of the manuscript was being prepared, the deputy librarian of the Cathedral Library, Dr. Charles Cotton, conjectured that it "might be a representation of Halley's Comet as it appeared in the twelfth century." An inquiry was submitted to the Astronomer Royal, who stated that Halley's Comet had appeared in 1145, and that, judging from contemporary accounts, it "was evidently a striking object." Since the date was within the period when the manuscript was known to have been written, and since no records of other comets near this time have come to light, the identification has not been challenged. In his letter to the editor of the *Times*, published in the issue of June 6, 1934, Dr. Cotton gives the following translation of the Anglo-Saxon inscription: "Concerning the star called comet. A suchlike ray has the star known as Comet, and in English it is called 'the hairy star.' It appears seldom, after [periods of] many winters, and then for an omen." From *The Canterbury Psalter* (London, Printed and Published for the Friends of Canterbury Cathedral, by P. Lund, Humphries, 1935. ND3357.C3J3 Rare Bk. Coll.).

BEST COPY AVAILABLE

Notes that "it was Halley himself who first pointed out the possibility." Includes discussion of possible effects of the earth's passage through the tail of Halley's Comet.

Reprinted in *Comets; Readings From Scientific American*, p. 13–14 (San Francisco, W. H. Freeman [1981] QB721.C65).

Extracts appear under the title "Collisions With Comets" in the *Literary Digest*, v. 40, Mar. 19, 1910, p. 536–537 (AP2.L58, v. 40).

623
Coupé, G. M., *and* P. J. Witteveen. The attitude and orbit control system for GIOTTO, ESA's Halley encounter mission. *In* Automatic control in space 1982. Proceedings of the ninth IFAC/ESA Symposium, Noordwijkerhout, The Netherlands, 5–9 July 1982. Edited by P. Th. L. M. van Woerkom. Oxford, New York, Published for the International Federation of Automatic Control by Pergamon Press [1983] (IFAC proceedings series) p. 25–37. illus. TL3000.A1A97 1983

References (5): p. 30.

"The GIOTTO attitude and orbit control and measurement system has a blowdown hydrazine reaction control system with eight thrusters, a star mapper, X beam sun sensors, pencil beam infrared earth sensors operating with a microprocessor based attitude and orbit control electronics. The GIOTTO AOCMS is designed to perform most of the required spacecraft manoeuvres either by direct ground command or time tagged command. An attitude recovery mode is also built in to autonomously recover the nominal attitude in case of emergency."

624
Coupé, G. M., R. M. Dean, *and* R. Lainé. Attitude perturbations of the Giotto spacecraft in the dust cloud of Comet Halley. *In* European Space Agency. ESA journal, v. 7, no. 1, 1983: 15–24. illus. TL787.E88c, v. 7

References (7): p. 24.

"ESA's interplanetary spacecraft Giotto will fly-by comet Halley in March 1986 on a trajectory that will bring the spacecraft within a few hundred kilometres of the comet nucleus. It is intended that it should pass through the scientifically interesting, relatively dense part of the dust cloud surrounding the nucleus, which will inevitably disturb the spacecraft's attitude. It will be spinning at a nominal 15 rpm and is equipped with a two-element dust protection shield to protect its vital equipment from damage due to dust-particle impacts occurring at a relative velocity of about 69 km/s.

"Taking into account the latest updates of the comet dust and gas environment model, this paper presents a mathematical evaluation of the statistical properties of the spacecraft attitude perturbations to be expected during Giotto's entry into and traversal through the comet dust cloud. The investigation was conducted with a view to providing analytical inputs for the planning of the interplanetary spacecraft trajectory and for consideration in the design of the instrumentation packages."

625
Cour-Palais, Burton G. Space vehicle meteoroid shielding design. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk*,

The Netherlands, 1979. Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 85–92. illus.
NASA accession no. N80–22212.
References (4): p. 90.

626
Coustet, Ernest. La comète de Halley. Revue scientifique, 47. année, 2 oct. 1909: 417–425. Q2.R53, v. 47
Contents: 1. Un ancien sujet de terreur.—2. Périodicité de la comète de Halley.—3. Anciennes apparitions de la comète de Halley.—4. Le dernier passage (1835–1836).—5. Aspects de la comète de Halley.—6. Le prochain retour.—7. Observations à faire pendant la prochaine apparition.

627
Coustet, Ernest. Le retour de la comète de Halley annoncé par la photographie. Photo-gazette, 19. année, 25 oct. 1909: 205–208.

628
Covault, Craig. Cost, gimbal difficulties threaten Halley mission. Aviation week & space technology, v. 117, Aug. 16, 1982: 26. TL501.A8, v. 117
"Both the science mission development costs and the potential cancellation of the Advanced Gimbal System (AGS) are threatening the Halley's observation schedule and ultraviolet telescope observations of other deep space objects."

629
Covault, Craig. European space unit to get proposal on comet flyby. Aviation week & space technology, v. 113, July 7, 1980: 38–39, 42. illus. TL501.A8, v. 113

630
Covault, Craig. Fund cut forces comet strategy shift. Aviation week & space technology, v. 111, Dec. 3, 1979: 61, 63, 65. illus. TL501.A8, v. 111
About changes in NASA's plans for spacecraft missions involving Halley's Comet.

631
Covault, Craig. Mission to Halley. Aviation week & space technology, v. 113, Dec. 15, 1980: 11. TL501.A8, v. 113
A letter headed "Halley Mission" commenting on the views expressed here from Paul R. Weissman, a senior scientist at the Jet Propulsion Laboratory, appears in v. 114, Feb. 2, 1981, p. 68. This in its turn provoked a letter, "Giotto Mission," from D. T. Young of the Physikalisches Institut, Bern, published in the Mar. 23 issue, p. 38. Weissman's response, "Halley Mission," appears in the Apr. 27 issue, p. 224, and another comment, from Joseph F. Veverka at Cornell, follows under the same heading in the May 4 issue, p. 82.

632
Covault, Craig. NASA Halley bid opposed, supported. Aviation week & space technology, v. 113, Oct. 20, 1980: 107, 109. illus. TL501.A8, v. 113

633
Covault, Craig. NASA plans new space missions; agency prepares new starts for Mars sample return, Halley's Comet probe and comet Tempel 2 landing. Aviation week & space technology, v. 108, Apr. 17, 1978: 14–16. illus. TL501.A8, v. 108

634
Cowell, Philip H., *and* Andrew C. D. Crommelin. Essay on the return of Halley's Comet. Von der Astronomischen Gesellschaft mit dem von Herrn A. F. Lindemann gestifteten Preise gekrönte und veröffentlichte Preisschrift. Leipzig, In Kommission bei W. Engelmann, 1910. 60 p. (Publikation der Astronomischen Gesellschaft, 23) QB1.A68, no. 23

635
Cowell, Philip H. Halley's Comet. Contemporary review, v. 97, May 1910: 580–588. AP4.C7, v. 97

636
Cowell, Philip H., *and* Andrew C. D. Crommelin. Note on the time of perihelion passage of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 70, Nov. 1909: 3–4. QB1.R7, v. 70

637
Cowell, Philip H. On Halley's Comet as seen from the earth. Nature, v. 82, Feb. 3, 1910: 400–401. illus. Q1.N2, v. 82

Diagram shows the position of the earth for six days in May and that of the comet on 27 dates measured in days from perihelion passage.

Reprinted in *Scientific American Supplement*, v. 69, Mar. 19, 1910, p. 188 (T1.S52, v. 69).

638
Cowell, Philip H., *and* Andrew C. D. Crommelin. The orbit elements of Halley's Comet. Astronomische Nachrichten, Bd. 185, Nr. 4433, 11. Aug. 1910: columns 265–268. QB1.A77, v. 185

A comment from C. J. Merfield appears in Bd. 186, Nr. 4452, 3, Nov. 1910, columns 191–192.

639
Cowell, Philip H., *and* Andrew C. D. Crommelin. The perturbations of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 67, Jan., Apr., June 1907: 174, 386–411, 511–521. QB1.R7, v. 67

640
Cowell, Philip H., *and* Andrew C. D. Crommelin. The perturbations of Halley's Comet in the past. First paper. The period 1301 to 1531. *In* Royal Astronomical Society. Monthly notices, v. 68, Dec. 1907: 111–125. QB1.R7, v. 68

641
Cowell, Philip H., *and* Andrew C. D. Crommelin. The perturbations of Halley's Comet in the past. Second paper. The apparition of

1222. *In* Royal Astronomical Society. Monthly notices, v. 68, Jan. 1908: 173–179. illus. QB1.R7, v. 68

A chart shows the comet's path in 1222.

642

Cowell, Philip H., *and* Andrew C. D. Crommelin. The perturbations of Halley's Comet in the past. Third paper. The period from 1066 to 1301. *In* Royal Astronomical Society. Monthly notices, v. 68, Mar. 1908: 375–378. QB1.R7, v. 68

643

Cowell, Philip H., *and* Andrew C. D. Crommelin. The perturbations of Halley's Comet in the past. Fourth paper. The period 760 to 1066. *In* Royal Astronomical Society. Monthly notices, v. 68, May 1908: 510–514. QB1.R7, v. 68

644

Cowell, Philip H., *and* Andrew C. D. Crommelin. The perturbations of Halley's Comet in the past. Fifth paper. The period B.C. 240 to A.D. 760. *In* Royal Astronomical Society. Monthly notices, v. 68, supplementary no., 1908: 665–670. QB1.R7, v. 68

645

Cowell, Philip H., *and* Andrew C. D. Crommelin. The perturbations of Halley's Comet, 1759–1910. *In* Royal Astronomical Society. Monthly notices, v. 68, Mar. 1908: 379–395. QB1.R7, v. 68

646

Cowell, Philip H., *and* Andrew C. D. Crommelin. Table giving approximate values of the perturbations of Halley's Comet by Jupiter and Saturn in the first and fourth quadrants of the orbit. *In* Royal Astronomical Society. Monthly notices, v. 68, Apr. 1908: 458–459. QB1.R7, v. 68

647

Cowen, Robert C. The importance of *not* seeing Halley's comet. Christian science monitor, v. 74, Aug. 12, 1982: 17. N&CPR

On the conclusions reached by Belton and Butcher as a result of their failure thus far to photograph the approaching comet.

648

Cowen, Robert C. A rendezvous with Halley's Comet. Christian Science monitor, v. 70, May 10, 1978: 21. N&CPR

On NASA plans for a spacecraft to send a probe towards Halley's Comet in 1985 and then proceed to rendezvous with Comet Tempel 2.

649

Cowen, Robert C. Wanted: Halley's Comet. Christian Science monitor, v. 69, Sept. 12, 1977: 1, 30. illus. N&CPR

"For scientists who want to intercept Halley's Comet, the opportunity of a lifetime may run afoul of President Carter's economy drive."

650
Cowley, John L., *comp.* A discourse on comets. Containing a brief description of the true system of the world, and an enumeration of all the discoveries which have been yet made concerning those temporary appearances, with respect to their orbits, forms, velocity, magnitudes, distances, tails, &c., particularly that whose return is expected in this or the following year. Extracted from the writings of Sir Isaac Newton, and other astronomers. London, Printed for the author, at the Academy, and sold by J. Payne, 1757. 47 p. CSt; CtY; ICJ; NIC; PPL

651
Craigie, Alexander V. [Halley's Comet] English mechanic and world of science, v. 90, Jan. 21, 1910: 586. T1.E5, v. 90

Letter to the editor reporting observations made at Marshford, North Devon, on Dec. 4, 8, and 31, 1909, and Jan. 12, 1910, on which last date the comet appeared to pass over an 8th-magnitude star.

652
Cravens, Gwyneth. Our footloose correspondents: toasting Halley's Comet. New Yorker, v. 59, June 27, 1983: 76–79. AP2.N6763, v. 59

Describes a meeting of the Halley's Comet Society held in the Officers' Mess of the Royal Corps of Transport, at the Regent's Park Barracks in London.

653
Crawford, Russell T., *and* William F. Meyer. Orbit of Halley's Comet. *In* Lick Observatory. Lick Observatory bulletin, v. 6, no. 179, 1910: 7. QB4.L7, v. 6

The orbital elements are also given in Crawford's article, "Note on the Orbits of Comets Halley, *a* 1910, and *e* 1909 (Daniel)," in the *Publications* of the Astronomical Society of the Pacific, v. 22, Apr. 1910, p. 97–98 (QB1.A4, v. 22).

654
Crawford, Russell T., *and* William F. Meyer. Perturbations of Halley's Comet due to the action of Venus and the earth. Astronomical journal, v. 26, Aug. 29, 1910: 134. QB1.A3, v. 26

654a
Crifo, J. F. Analysis of the nucleus and circumnuclear area of comet Halley with the "I.K.S." infrared sounder from the "Vega" flyby probes. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 203–206. illus. QB723.H2R4 1983

References (13): p. 206.

655
Crifo, J. F., N. Coron, J. P. Bibring, Michel Combes, J. Crovisier, T. Encrenaz, *and* Eric Gérard. The infrared experiment of the Venera-Halley mission. *In* American Astronomical Society. Bulletin, v. 13, no. 3, 1981: 699. QB1.A255, v. 13

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 13–16, 1981, at Pittsburgh, Pennsylvania.

656

Crifo, J. F. Infrared sounding of Comet Halley from the flyby Venera Halley probes. *In* Alpbach Summer School, *1981*. The solar system and its exploration. Papers presented at the Alpbach Summer School held at Alpbach, Austria, 29 July–7 August 1981, organised by ASSA, sponsored by ESA, CNES & DFVLR. [Compiled by W R Burke] Paris, European Space Agency, 1981. p. 229–244. illus.

NASA accession no. N82-26113.

Bibliography: p. 235.

"One of the unique capabilities provided by the Soviet flyby mission to Comet Halley will be the sounding of the innermost regions of the comet at far infrared wavelengths (2.5–12 microns) performed by the French instrument 'IKS' ... It will be the only experiment giving access to the thermodynamic budget of the nucleus. It will likely be also the only one giving information on the crystalline structure of the various components of grains in the inner coma and perhaps on the minerals and ices making up the nucleus. Finally it will identify and measure their production rate with negligible risk of environmental contamination."

657

Crommelin, Andrew C. D. Abstract of lecture delivered before the association at the meeting held on February 27, on Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 17, Mar. 1907: 211–220.
QB1.B75, v. 17

Comments on the lecture appear on p. 204 of the same issue.

658

Crommelin, Andrew C. D. Address on the return of Halley's Comet in 1910. *In* Victoria Institute, or Philosophical Society of Great Britain, *London*. Journal of the transactions. v. 42. London, 1910. p. 18–34.
AS122.L9, v. 42

Given May 9, 1910, at the annual general meeting of the society.

659

Crommelin, Andrew C. D. The Aquarid meteors and Halley's Comet. Knowledge, new ser., v. 9, May 1912: 186. Q1.K7, n.s., v. 9

Comments on meteoric phenomena reported by Miranda y Marrón (see item 2084).

660

Crommelin, Andrew C. D. Comet catalogue. Containing the orbits of comets observed from the beginning of 1894 to April, 1925, together with improved orbits of many earlier comets: being a sequel to Galle's Cometenbahnen. Perth, Printed and published for the Association by Milne, Tannahill, & Methven, 1925. 23 p. (British Astronomical Association. Memoirs, v. 26, pt. 2) QB1.B8, v. 26

Includes data for 23 returns of Halley's Comet. Reference to a published source is given for each entry.

661

Crommelin, Andrew C. D. Comets. *In* Phillips, Theodore E. R., *and* William H. Steavenson, *eds.* Hutchinson's Splendour of the heavens; a popular authoritative astronomy. v. 1. London, Hutchinson, 1923. p. 388–431. illus. QB44.P6, v. 1

Halley's Comet is discussed and frequently referred to throughout. There are 30 illustrations relating to the comet, on p. 12–13 and p. 388–405.

662

Crommelin, Andrew C. D. Corrected ephemeris of Halley's Comet. Astronomische Nachrichten, Bd. 182, Nr. 4359, 28. Sept. 1909: columns 249–250; Bd. 183, Nr. 4379, 21. Dez. 1909: columns 169–172. QB1.A77, v. 182–183

For Aug. 28-Dec. 26, 1909, and Dec. 26, 1909 – May 30, 1910.

Crommelin's data for Oct. 27–Dec. 26, 1909, are reprinted in *Popular Astronomy*, v. 17, Nov. 1909, p. 577, and for Apr. 4–May 30, 1910, in v. 18, Mar. 1910, p. 182 (QB1.P8, v. 17–18); the latter also appear in *Scientific American*, v. 102, Mar. 19, 1910, p. 239 (T1.S5, v. 102). The corrected elements from Nr. 4379 are given in *Popular Astronomy*, v. 18, Feb. 1910, p. 115.

663

Crommelin, Andrew C. D. The expected return of Halley's Comet. Science progress, v. 3, Apr. 1909: 543–556. Q1.S79, v. 3

Reviews the comet's history and provides a list of 29 returns with perihelion dates, number of days between successive returns, where seen, and notes; also treats Ångström's discovery of regularities in the varying lengths of the comet's revolutions.

"Ephemeris of Halley's Comet in 1910, by Dr. Smart": p. 557.

Brief summaries appear in *Nature*, v. 80, Apr. 29, 1909, p. 259–260 (Q1.N2, v. 80), and *Scientific American*, v. 101, Aug. 28, 1909, p. 142 (T1.S5, v. 101).

664

Crommelin, Andrew C. D. Halley's Comet. Knowledge, new ser., v. 8, Mar., June 1911: 105, 229. Q1.K7, n.s., v. 8

News notes reporting continuing observations. The second also includes a method of calculating the comet's speed and distance from the sun at any time, in response to an inquiry published in the April issue (p. 135).

665

Crommelin, Andrew C. D. Halley's Comet. Knowledge, new ser., v. 13, June 1916: [illegible]0. Q1.K7, n.s., v. 13

Chiefly comments on Ellerman's photographs published in the *Report, 1909–1913*, of the American Astronomical Society's Comet Committee (see item 51).

666

Crommelin, Andrew C. D. [Halley's Comet] Observatory, v. 31, July, Nov.–Dec. 1908: 291–292, 423, 465; v. 32, Aug., Oct.–Dec. 1909: 334–335, 399–400, 435–436, 476–477; v. 33, Jan.–July, Sept.–Oct., Dec. 1910: 64–65, 104–105, 142–143, 182–183, 216–217, 255–257, 296–297, 375–377, 410, 491–492; v. 34, Jan.–Apr., June–July 1911: 56, 91–92, 123, 165, 243, 280; v. 35, Feb., Sept. 1912: 94–95, 342. QB1.O2, v. 31–35

News notes, many with ephemerides. A photograph showing the comet, made at Greenwich with the 30-inch reflector on Sept. 23, 1909, appears as the frontispiece in the Nov. 1909 issue.

LC lacks the Apr. 1911 issue.

667

Crommelin, Andrew C. D. Note on the approaching return of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 67, Dec. 1906: 137–140. illus. QB1.R7, v. 67

On the discrepancy in the 1910 perihelion passage dates predicted by Ångström and de Pontécoulant. A diagram shows the positions of Jupiter during the comet's returns in 1531, 1607, 1682, 1759, 1835, and 1910.

668

Crommelin, Andrew C. D. Professor Barnard's observations of Halley's Comet. Knowledge, new ser., v. 11, Sept. 1914: 329–330. plate. Q1.K7, n.s., v. 11

Summarizes and comments on the lengthy study in the June 1914 *Astrophysical Journal* (see item 187). The plate reproduces a print sent by Prof. Lowell illustrating the Flagstaff photographic observations made May 18–June 1, 1911.

669

Crommelin, Andrew C. D. [Remarks on Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 20, Jan.–June 1910: 184–185, 236, 293–294, 345–347, 404–410, 466–467. QB1.B75, v. 20

News from a variety of sources presented at the Association's monthly meetings. In Dr. Crommelin's absence, Mr. Maunder made the presentation in May.

670

Crommelin, Andrew C. D. [Reply to query on whether the expected appearance of Halley's Comet in 1910 may be prevented by causes similar to those which prevented the expected brilliant display of Leonids in November 1899] *In* British Astronomical Association, *London*. Journal, v. 17, Dec. 1906: 96–97. QB1.B75, v. 17

671

Crommelin, Andrew C. D. The return of Halley's Comet in 1759. *In* British Astronomical Association, *London*. Journal, v. 17, Apr. 1907: 282–283. QB1.B75, v. 17

Letter to the editor commenting on and quoting parts of two poems on the 1759 appearance of Halley's Comet published in the *Gentleman's Magazine* for Oct. 1758 and May 1759 (see items 550 and 2267).

672

Crommelin, V. W. Vande sterre metten steert. Eigen haard, 36. jaarg., 9–16, 30 apr. 1910: 239–240, 244–247, 283–285. illus., port. AP15.E3, v. 36

About comets in general and Halley's Comet in particular.

673
Cronstrand, Simon A. Halleyska cometen. *In* Årsberättelse i astronomien, den 31 mart. 1831. Stockholm, P. A. Norstedt, 1831. p. 15–16.
Q9.A6, 1830

Bibliographic footnotes.

Reports the orbital elements published by Rosenberger and Lubbock.

674
Cronstrand, Simon A. Halleyska cometen. *In* Årsberättelse i astronomien, den 31 mart. 1833. Stockholm, P. A. Norstedt, 1833. p. 45–47.
QB1.A29, 1833

Bibliographic footnotes.

Presents orbital elements calculated by various astronomers for the comet's appearances in 1682, 1759, and 1835, and Damoiseau's figures for the number of days between successive perihelion passages, beginning with the 1531–1607 interval.

Under the same heading in the *Årsberättelse* for the period ending 31 mart. 1834, p. 20–21, Cronstrand reports on Rosenberger's work on perturbations of the comet's orbit during the period 1682–1759.

675
Cronstrand, Simon A. Halleyska kometen 1835. *In* Årsberättelse i astronomien, den 31 mart. 1836. Stockholm, P. A. Norstedt, 1836. p. 35–45.
QB1.A29, 1836

Bibliographic footnotes.

Includes summaries of reports published in *Astronomische Nachrichten* and the *Edinburgh New Philosophical Journal.*

676
Cronstrand, Simon A. Om etherns verkan på kometernas rörelse med särskilt afseende på den Halleyska. *In* Årsberättelse i astronomien, den 31 mart. 1835. Stockholm, P. A. Norstedt, 1835. p. 34–36. Q9.A6, 1835

An ephemeris for Halley's Comet, calculated for Stockholm, July 26–Nov. 7, 1835, by Selander from Pontécoulant's elements, appears on p. 37–38.

677
Crosby, William C. The comet as a "sign in the heavens." Our times, v. 26, May 12, 1910: 8–10. illus. AP201.O9, v. 26

Mostly about Halley's Comet. See also the cartoon and caption on the cover of the issue ("The Earth Has To Take the Comet's Dust").

678
Crovisier, J., J. Le Bourlot, T. Encrenaz, *and* Michel Combes. Infrared fluorescence of molecules in Halley's Comet. *In* American Astronomical Society. Bulletin, v. 14, no. 3, 1982: 752. QB1.A255, v. 14

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 19–22, 1982, in Boulder, Colorado.

678a
Crovisier, J., Michel Combes, J. F. Crifo, *and* T. Encrenaz. The infrared synthetic spectrum of comet Halley. *In* Recent researches into solid

bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon [illegible] [1983] (Advances in space research, v. 2, no. 12) p. 159–162. illus. QB723.H2R4 1983

References (8): p. 162.

679

Curtis, Heber D. Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 22, Feb. 1910: 33. plate. QB1.A4, v. 22

The plate reproduces a photograph made with the Crossley Reflector on Feb. 5.

680

Curtis, Heber D. Note on Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 21, Dec. 1909: 259–261; v. 22, Apr. 1910: 96–97. QB1.A4, v. 21–22

The first article includes an ephemeris for the period Jan. 2–Mar. 5, 1910; continuations, entitled "Ephemeris of Halley's Comet," appear in v. 22, Feb.–Apr. 1910, p. 37–38, 101. These cover, respectively, the periods Mar. 6–May 30 and June 1–July 31, and are taken from Crommelin's comet notes in the *Observatory*, v. 32, Nov.–Dec. 1909, and v. 33, Mar. 1910 (QB1.O2, v. 32–33).

681

Curtis, Heber D. Note on photographs of Halley's Comet. *In* Lick Observatory. Lick Observatory bulletin, v. 5, no. 174, 1910: 183. QB4.L7, v. 5

Describes changing features revealed in photographs taken during the period Dec. 11, 1909–Feb. 11, 1910.

Reported as "Halley's Comet" in *Nature*, v. 83, Mar. 17, 1910, p. 79 (Q1.N2, v. 83), and as "Photographs of Halley's Comet" in *Popular Astronomy*, v. 18, Apr. 1910, p. 243 (QB1.P8, v. 18).

682

Curtis, Heber D. Observations of Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 21, Oct. 1909: 211. QB1.A4, v. 21

Five photographic observations made during Sept. 12–22.

683

Curtis, Heber D. Observations of Halley's Comet 1909 c. Astronomische Nachrichten, Bd. 188, Nr. 4506, 20. Juni 1911: columns 313–314. QB1.A77, v. 188

Photographs taken with the Crossley Reflector at the Lick Observatory, Mar. 27–May 27, 1911.

684

Curtis, Heber D. Photographs of Halley's Comet at the Lick Observatory. *In* American Astronomical Society. Publications. v. 2. [Ann Arbor, Mich.] 1915. p. 15. QB1.A27, v. 2

Abstract of a paper presented at the 11th meeting of the Astronomical and Astrophysical Society of America, Aug. 17–19, 1910, in Cambridge, Massachusetts. An even shorter summary, entitled "The Lick Observatory Photographs of Halley's Comet," appears in *Science*, new ser., v. 32, Dec. 16, 1910, p. 877 (Q1.S35, n.s., v. 32).

685

Curtis, Heber D. Photographs of Halley's Comet made at the Lick Observatory. *In* Astronomical Society of the Pacific. Publications, v. 22, June 1910: 117–130. plates. QB1.A4, v. 22

"In the interval from September 12, 1909, to July 7, 1910, Halley's Comet was photographed at the Lick Observatory on ninety-five nights, with a total of three hundred and seventy negatives . . ."

Plates reproduce photographs taken on May 1, 5, 9, 13, and 23, and June 6 and 7.

An excerpt, entitled "Dr. Curtis's Photographs of Halley's Comet," with a plate reproducing the June 6 and 7 photographs and tables of (1) velocities along the tail and (2) the length of the tail, is given in *Popular Astronomy*, v. 18, Oct. 1910, p. 505–506 (QB1.P8, v. 18). A plate with the same photographs accompanies a summary article, "Photographische Beobachtungen des Halleyschen Kometen auf der Lickssternwarte," in *Sirius*, 43. Bd., Okt. 1910, p. 221–223.

A plate entitled "Der Halleysche Komet vor und nach der Begegnung mit der Erde," with the Lick photographs of May 1, May 5, June 6, and June 7, appears in *Das Weltall*, 11. Jahrg., 2. Augustheft 1911, facing p. 338 (QB1.W4, v. 11).

Further information on the activities of the Lick Observatory in connection with the comet can be found in W. W. Campbell's fifth biennial report, in the *Publications* of the Astronomical Society of the Pacific, v. 22, Dec. 1910, p. 229–230.

686

Curtis, Heber D. Position observations of Comet Halley. *In* Lick Observatory. Lick Observatory bulletin, v. 5, no. 170, 1909: 165. QB4.L7, v. 5

Data derived from 20 plates made with the Crossley Reflector during the period Sept. 12–Nov. 15.

687

Curtis, Heber D. Recent photographs of Comet Halley. Popular astronomy, v. 19, Aug./Sept. 1911: 451–452. QB1.P8, v. 19

Gives positions derived from six plates taken during the period Mar. 27–May 27, 1911.

688

Curtis, John A. Halley's Comet. Knowledge, new ser., v. 7, June–July 1910: 247, 281–282. Q1.K7, n.s., v. 7

News notes on meteorological observations at the time of the earth's passage through the comet's tail.

689

Curtis, Philip. Invasion of the comet people. Text illus. by Tony Ross. New York, A. A. Knopf [1983] 122 p. illus. (Capers)
PZ7.C9483 Io 1983

For young readers.

First published in London by Andersen Press in 1981 as *Mr. Brower and the Comet Crisis.*

Aliens from another stellar system are traveling with Halley's Comet and plan to invade the earth.

690
Czapiewska, Barbara. Amerykańskie plany lotów kosmicznych do komet. Postępy astronomii, t. 27, lip./wrzes. 1979: 153–163. illus.
QB1.P835, v. 27

Reference (1): p. 163.

"The article describes alternative strategies for missions to Halley's comet in 1985–1986. It also shows that a large scientific return would be acquired from a comet intercept in spite of the high flyby speeds of almost 60 km/s that are associated with this mission mode. The possibility of retargeting the cometary spacecraft to additional comets after the Halley intercept also exists."

691
Czy będzie koniec świata? Przejście komety Halley'a dnia 18 maja 1910 r. Warszawa, L. Straszewicz, 1910. 8 p. illus.

692
Czy koniec świata. Kometa Halleya w 1910 r. O wszechświecie. O kometach. O komecie Halleya. Łódź, J. Szczęśniewski, 1910. 32 p.

693
Czy 18 maja r.b. nostąpi koniec świata? Łódź, S. Książek, 1910. 16 p.

694
Dale, David, R. Pacault, *and* Rüdeger Reinhard. The Joint NASA/ESA cometary mission to comets Halley and Tempel 2. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP-153) p. 3–5. illus.

NASA accession no. N80–22201.

695
Dale, David, *and* G. P. Haskell. Summary report on studies of the proposed ESA/NASA Halley fly-by and Tempel-2 rendezvous mission. *In* Workshop on Cometary Missions, *Bamberg, 1979.* Cometary missions; proceedings. [Edited by] W. I. Axford, H. Fechtig, J. Rahe. Bamberg, 1979. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 132) p. 13–14.
DN-Ob

Abstract only.

696
D'Amato, G. The comet-seekers: looking for Halley's. Illustrated London news, v. 136, May 28, 1910: 819. illus.
AP4.I3, v. 136

Full-page drawing of crowds at the flagstaff on Hampstead Heath. A description of the scene at the heath on the evening of May 22 appears in the London *Times* for May 23, p. 38 (N&CPR).

697
Damoiseau, Théodore, *baron* de. Mémoire sur l'époque du retour au périhélie de la comète de l'année 1759. *In* Accademia delle scienze di Torino. Memorie. t. 24. Torino, Dalla Stamperia reale, MDCCCXX. p. 1–76.
AS222.T61, v. 24

"Lu dans la séance du 7 janvier 1818."

"The Comet Seekers: Looking for Halley's," a drawing by G. D'Amato, is from the *Illustrated London News*, v. 135, May 28, 1910, p. 819. The original caption reads: "Many Londoners have watched for the comet by night, standing on the higher levels of their city. Especially have they gathered about the Flagstaff on Hampstead Heath, which is on about the same level as the Cross of St. Paul's. People have arrived at the Heath on foot, by Tube, by tram, by carriage, and by taxi, and have waited very patiently to see, not only the comet, but its tail. At present, the tail has been invisible to them; and at most they have seen what appears to be a rather pale star."

The poor showing of Halley's Comet in Great Britain and Western Europe in the spring of 1910, which disappointed many viewers, resulted from bad weather as well as the comet's low altitude after perihelion. Under clear skies in southern latitudes, the comet was an impressive sight.

698

Damoiseau, Théodore, *baron* de. Sur les perturbations des comètes. *In* France. *Bureau des longitudes.* Connaissance des tems ... pour l'an 1832. Paris, Bachelier, 1829. Additions, p. 25–34. QB8.F9, 1832

Includes revision of his calculations for the orbit and prediction of the 1835 perihelion passage date for Halley's Comet, taking into consideration the perturbative effects of the earth's gravitational field.

699

Daniels, Paul A. A close look at comets. *In* British Astronomical Association, *London.* Journal, v. 90, Apr. 1980: 239–244. illus. QB1.B75, v. 90

References (3): p. 244.

On plans for a joint NASA/ESA Halley flyby/Tempel 2 rendezvous mission.

700

Danielson, George Edward, Michael C. Malin, *and* W. Alan Delamere. High resolution imaging systems for spin-stabilized Probe spacecraft. *In* Imaging spectroscopy. [Seminar] February 10–11, 1981, Los Angeles, California. David D. Norris, editor. Bellingham, Wash., SPIE—The International Society for Optical Engineering [1981] (Proceedings of SPIE, v. 268) p. 42–48. illus. TA1505.I46

Innovative design for an imaging system for a Comet Halley fast flyby. "The European Space Agency Giotto mission to Comet Halley will have an imaging instrument of this type."

701

Darlu, A. Dernières observations de la comète de Halley faites à Vienne. Extrait d'une lettre de M. Darlu, vice-président de la Société d'agriculture, sciences et arts de Meaux. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 2, 9 mai 1836: 474–475. Q46.A14, v. 2

Darlu's letter presents information received from Littrow, including the comet's position when observed on Apr. 6.

702

Darquier de Pellepoix, Augustin. Extrait d'une lettre écrite à M. Le Monnier, le 25 avril 1759, qui contient les observations sur la comète, faites à Toulouse le 16 avril de la même année. *In* Académie des sciences, *Paris.* Mémoires de mathématique et de physique, présentés à l'Académie royale des sciences, par divers savans, & lûs dans ses assemblées. t. 6. A Paris, De l'Impr. royale, M. DCCLXXIV. p. 240. Q46.A142, v. 6

703

Darquier de Pellepoix, Augustin. Observation de la comete de 1759. *In his* Observations astronomiques, faites a Toulouse. A Avignon, Chez J. Aubert, M. DCC. LXXVII. p. 28–29. CU; OU

Gives details of an observation made Apr. 16 and describes several others made during May.

704

Darroch, John. Hui hsing chen shuo. Halley's Comet, visible next year. Shanghai, Chinese Tract Society, 1909. broadside. illus.

Advertised in the *Chinese Recorder and Missionary Journal*, v. 41, 1910 (BV3410.C6, v. 41), where it is described as an illustrated sheet tract "with star map showing the course of the comet among the stars. The constitution, periodicity, and paths of comets clearly explained. A splendid opportunity to deal a staggering blow to superstition. Price: 5 cash per sheet postpaid." Presumably the text is in Chinese.

705
Darrow, Floyd L. About a famous comet. St. Nicholas, v. 55, Dec. 1927: 128. illus. AP201.S3, v. 55
The illustration appears on p. 129.

706
Darvai, Móricz. Üstökösök és meteorok. Budapest, Kiadja a K. M. Természettudományi Társulat, 1888. 269 p. illus. (Természettudományi könyvkiadó-vállalat, 35. kötet) QB749.D2
Halley's Comet: p. [28]–32, 34–38, 55–64.

707
Daughtrey, Taz. Comet chasers regroup. Insight, v. 4, May 1980: 4–5. illus.
About ESA, Japanese, and Soviet plans for Halley's Comet missions.

708
David, H. P., *and* H. N. M'Gill. Observations of Halley's Comet made on board s.s. "Romanic." *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 618. QB1.R7, v. 70
Observations were made May 18 and 22 while eastbound in the North Atlantic.

709
Davidson, George. There is no danger from Halley's Comet. New York American, May 6, 1910: 20. N&CPR
Decries the sensational predictions that have been published, pointing out that they have produced distress and despair among "the uneducated millions."

710
Davidson, Martin. Comets. *In* Davidson, Martin, *ed.* Astronomy for everyman. London, J. M. Dent; New York, E. P. Dutton [1953] p. 220–241. illus. QB44.D35
Information on Halley's Comet is scattered throughout the section.

711
Davidson, Martin. Halley's Comet. Knowledge, new ser., v. 8, June 1911: 225–226. illus. Q1.K7, n.s., v. 8
Responds to a query raised by "Interested" in the April issue (p. 135) concerning the method of reckoning the comet's speed and distance from the sun at any time.

712
Davies, Owen. Space: activist update. Omni, v. 4, Apr. 1982: 20, 133–134. col. illus. AP2.O452, v. 4

Includes information on a plan "to send a profit-making research probe to Halley's Comet, possibly launched from the space shuttle."

713

Davis, Joel. Watching Halley from earth. Star & sky, v. 2, Apr. 1980: 21.
DN-Ob

714

Davis, Neil W. Japan's Halley's Comet probes. Spaceflight, v. 25, June 1983: 272–274. illus. TL787.B725, v. 25

"Planet-A will be a spin-stabilised probe featuring Charge-Coupled Device (CCD) scanning instrumentation. On 8 March 1986 it will make its closest approach to the comet ..." An experimental version called "MS-T5" will be launched eight months before Planet-A. Its "orbit has yet to be finalised; it may be directed to take the probe into the comet's ion tail."

715

[Davis, Singleton W.] The comet the "Star of Bethlehem." Humanitarian review, v. 8, June 1910: 713–714. BL2700.H8, v. 8

Rejects an assertion to this effect made by a Universalist minister.

716

The Day of the comet. Chicago daily tribune, v. 69, May 18, 1910: 10.
N&CPR

Poem. A companion piece, "The Morning After," appears in the May 19 issue, p. 10.

Other verses in the *Chicago Tribune* include the following quatrains: "It's Coming Back," signed Mac, May 10, p. 10; "In Brief," on the comet's rapid departure, May 21, p. 10; and "Old Story," signed P. G., on the comet's missing tail, May 24, p. 10.

717

Dean, John C. Halley's Comet. Scientific American, v. 98, Apr. 11, 1908: 259. illus. T1.S5, v. 98

Letter to the editor providing information on where to look for the approaching comet during the period July 1908–Oct. 1909.

718

Dean, John C. Halley's Comet and the Church. Popular astronomy, v. 18, May 1910: 295–296. illus. QB1.P8, v. 18

719

Dean, John C. Relative positions of Halley's Comet, the earth, and the sun. Scientific American, v. 102, Jan. 8, 1910: 27. illus. T1.S5, v. 102

720

Dean, John C. The story of Halley's Comet. Popular astronomy, v. 16, June/July 1908: 331–345. illus. QB1.P8, v. 16

721
Debris from Halley's Comet poses threat to spacecraft. Geo, v. 4, Sept. 1982: 117. col. illus. AP2.G365, v. 4
Quotes Zdenek Sekanina. The drawing is by Leavenworth Jackson.

722
Deekman, F. The tour of the comet. New York American, May 18, 1910: 20. N&CPR
Poem.

723
Delaunay, Charles E. Sur les comètes périodiques. *In* France. *Bureau des longitudes*. Annuaire pour l'an 1872. Paris, Gauthier-Villars. p. [443]–471. QB9.F8, 1872
"Comète de Halley. Période de 76 ans": p. 444–460.

724
Delle comete in generale, ed in particolare di quella d'Halley, che dovrà passare al perielio dal 7 al 13 novembre 1835. Milano, Dalla tip. Tamburini e Valdoni, 1835. 32 p.

725
Delpino, F. Aspettando la cometa di Halley. Coelvm, v. 50, sett./ott. 1982: 263–268. illus. DN-Ob

726
Delpino, F. Avvistata la cometa periodica di Halley (1982i). Coelvm, v. 50, nov./dic. 1982: 336. DN-Ob
On the comet's recovery.

727
Delporte, Eugène. Comète de Halley. Ciel et terre, 31. année, jan. 1910: 32–34. plate. QB1.C5, v. 31
The plate shows the path of the comet among the constellations, Dec. 1, 1909–May 30, 1910.

728
Delporte, Eugène. Comète de Halley. Ciel et terre, 31. année, août 1910: 313–323. plates. QB1.C5, v. 31
—— —— Offprint. Bruxelles, Société belge d'astronomie [1910] 13 p. plates. NN
The plates reproduce a number of photographs taken by Mascart at Tenerife.

729
Delporte, Eugène. Comète de Halley [notes] Ciel et terre, 31. année, avril–mai, sept. 1910: 184–185, 226, 381. plate. QB1.C5, v. 31
The plate (facing p. 226), showing the path of the comet among the constellations, is similar to one published in the jan. 1910 issue but extends the track to July 13, 1910.

730
Delsaulx, Joseph. Calixte III et la comète de Halley. Collection de précis historiques, 8. année, 1. juil. 1859: 301–305.

731
Delsemme, Armand H. The production rate of dust by comets. *In* IAU Colloquium No. 31 on Interplanetary Dust and Zodiacal Light, *Heidelberg, 1975.* Interplanetary dust and zodiacal light. Proceedings of the IAU Colloquium no. 31, Heidelberg, June 10–13, 1975. Edited by H. Elsässer and H. Fechtig. Berlin, New York, Springer-Verlag, 1976. (Lecture notes in physics, v. 48) p. [314]–318. QB791.I15 1975

References (14): p. 318.

A section is devoted to the production rate of Comet Halley, which is used as a standard of comparison for the other comets studied.

The succeeding article, "Can Short Period Comets Maintain the Zodiacal Cloud?" by S. Röser (p. [319]–322), includes a table that shows Comet Halley "to be the best dust source of all, but because of its high eccentricity most of the dust is lost from the Solar System . . ."

732
Demenko, A. A. Tipy kometnykh khvostov. *In* Fizika luny i planet. [Otv. redaktor I. K. Koval′] Kiev, Naukova dumka, 1964. p. 126–[138] QB501.F59

References (70): p. 137–[138]

"F. A. Bredikhin's method was used to determine the types of tails of 112 comets. The type of tail was determined for the first time in 96 of these comets. A catalog of types is given for 167 comets."

The "Katalog kometnykh khvostov" on p. [130]–[138] includes information for six apparitions of Halley's Comet—those of 837, 1531, 1607, 1682, 1835, and 1910.

733
Dennett, Frank C. Jupiter and his satellites—Hyperion—and Halley's Comet. English mechanic and world of science, v. 91, June 3, 1910: 401. T1.E5, v. 91

Letter to the editor including report of observations of the comet made May 22, 23, and 26 at Hackney.

734
Denning, William F. The coming of Halley's Comet. English mechanic and world of science, v. 90, Aug. 20, 1909: 51–52. illus. T1.E5, v. 90

735
Denning, William F. The expected re-discovery of Halley's Comet. Observatory, v. 32, Jan. 1909: 62–63. QB1.O2, v. 32

Letter to the editor.

736
Denning, William F. Halley's Comet. Observatory, v. 33, June 1910: 253–254. QB1.O2, v. 33

Letter to the editor on observations made at Bristol.

737
Denning, William F. Meteor shower of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 46, May 1886: 396–398.
QB1.R7, v. 46

738
Denning, William F. The meteoric shower of Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 12, Feb. 1902: 175–176.
DN-Ob

A paper read at a meeting of the Association on Jan. 29, 1902. A supplementary note by the author was published in the May issue, p. 288–289 (QB1.B75, v. 12).

739
Denning, William F. The meteoric shower of Halley's Comet. Nature, v. 80, Apr. 29, 1909: 259–260.
Q1.N2, v. 80

Urges that the Eta Aquarid shower be observed with special attention during 1909 and 1910. See also Denning's letter on this subject in v. 83, Apr. 28, 1910, p. 260, and his summary of observations in the May 12 issue, p. 320–321.

740
Denning, William F. The meteoric shower of Halley's Comet. Observatory, v. 38, Sept. 1915: 366–367.
QB1.O2, v. 38

Letter to the editor.

741
Denning, William F. The meteors of Halley's Comet. Nature, v. 77, Apr. 30, 1908: 619.
Q1.N2, v. 77

Suggests that the Aquarids may be associated with Halley's Comet.

742
Denning, William F. Next return of Halley's Comet. Knowledge, v. 25, Mar. 1902: 70.
Q1.K7, v. 25

Includes an extract (covering Jan. 7–Aug. 3, 1910) from David Smart's ephemeris published in the *Journal* of the British Astronomical Association, v. 12, Jan. 1902.

743
Denning, William F. Visibility of Halley's Comet. Nature, v. 81, Sept. 30, 1909: 395.
Q1.N2, v. 81

Letter to the editor.

744
[Der auf den April und May wiederum sichtbare Comet] Neue Zeitungen von gelehrten Sachen, 8. März 1759: 183–184.
AP30.N56, 1759

Includes an ephemeris for the period Mar. 30–May 13.

745
De Regis, F., *and* Henry W. Taunt. Comets, historical and marvellous, with the story of Halley's Comet and its numerous appearances, from the earliest ages to the present time. Oxford, H. W. Taunt [1910] 34 p. front. CtY

746
Derman, Abram B. Kometa Galleı͡a. Semidnevnyĭ roman. Russkoe bogatstvo, sent. 1913: 85–115; okt.: 66–114; noı͡abr′: 70–109.
AP50.R85, 1913

747
Des comètes de Halley et de Biéla, et des chances de rencontre de l'un de ces astres avec la terre. Revue britannique (Paris), 3. sér., t. 18, nov. 1835: 33–54. AP20.R253, s. 3, v. 18

Based in part on Lardner's article in the *Edinburgh Review* (see item 1785).

748
Des Kometen neuester Weltgang. Reise-Memoiren, hrsg. von Seni-Tasso, dessen Kammerdiener. Stuttgart, Köhler, 1835. 2 v.

Contents: 1. Station: Auf dem Stier (32 p.).—2. Station: Auf dem Polarstern (32 p.).

749
Deslandres, Henri A. Aménagement du grand télescope de Meudon pour la photographie des comètes. Application à la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 149, 14 déc. 1909: 1101–1103. Q46.A14, v. 149

750
Deslandres, Henri A., *and* Adrien Bernard. Note préliminaire sur le spectre de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 149, 13 déc. 1909: 1103–1105.
Q46.A14, v. 149

751
Deslandres, Henri A., *and* Jean Bosler. Sur les apparences présentées par la queue de la comète de Halley lors du passage du 19 mai dernier. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 25 juil. 1910: 265–269. illus. Q46.A14, v. 151

752
Déterminer d'aprés une premiere observation le cours de la comete, dont les astronomes ont prédit le retour pour l'année 1758. Journal encyclopédique, 15. nov. 1756: 29–36. AP20.J8, 1756, v. 8

753
Die deutsche astronomische Expedition nach Teneriffa. Die Umschau, 14. Jahrg., 23. Juli 1910: 588–590. illus.

One of the objectives of the expedition was to observe Halley's Comet. A photograph of the comet taken May 12 is reproduced.

754
Devoto, Fortunato J. El cometa Halley en 1910. Caras y caretas, año 13, 14 de mayo de 1910: [76]–[78] illus. AP63.C27, 1910

The illustrations include sketches made at the observatory of La Plata, Argentina, on Apr. 19, 20, 22, 23, 24, and 25, and a photograph taken at the Cordoba observatory on Apr. 26.

Father Devoto, provisional director of the La Plata observatory, is pictured together with a number of the observatory's instruments in the immediately preceding article, "Una visita al observatorio astronómico de La Plata" (p. [73]–[75]).

755

Dewhurst, Henry W. Dr. Halley's Comet. *In his* A popular treatise upon cometary astronomy. London, M, DCCC, XLIV. p. 17–21.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. Cl. 423.

756

Dialoguito de Mamá Tierra con D. Cometa Halley. México, Imp. de A. Vanegas Arroyo, 1910. broadside. illus.

Held by the Amon Carter Museum.

The illustration is a zinc etching by Posada. The dialogue is in verse; the earth and the moon try to persuade the comet not to destroy the world's population.

Reproduced in *Posada's Mexico*, p. 235 (Washington, Library of Congress in cooperation with the Amon Carter Museum of Western Art, Fort Worth, Texas, 1979. NE546.P6A4 1979).

757

Di Cicco, Dennis. Comet Halley found. Sky & telescope, v. 64, Dec. 1982: 551. illus., col. port. QB1.S536, v. 64

The portrait is of the two astronomers who announced the recovery.

758

Dick, Thomas. Reappearance of Halley's Comet in 1835. *In his* The sidereal heavens and other subjects connected with astronomy, as illustrative of the character of the deity, and of an infinity of worlds. New-York, Harper, 1840. p. 343–346. QB43.D5 1840

A sketch of the comet's orbit appears on p. 371.

This extract was quoted almost in its entirety by Lardner in his *Popular Lectures* (see item 1786).

758a

Dickinson, Terence. Appointment with a well-known comet. Nature Canada, v. 11, Oct./Dec. 1982: 4–10. illus. (part col.)

"Scientists are gearing up for the long-awaited return of Halley's Comet—everyone's favourite cosmic visitor."

759

Dickinson, Terence. Europeans plan mission to Halley's Comet. Star & sky, v. 2, Oct. 1980: 8, 10. illus. DN-Ob

760

Dickinson, Terence. Halley's comet returns to earth. Maclean's, v. 95, Nov. 8, 1982: 60. col. illus. AP5.M2, v. 95

761
Dickinson, Terence. The return of Halley's Comet. Astronomy news, v. 17, July/Aug. 1979: 2–4. illus.

762
Dickson, David. Halley missions: NASA to go? Nature, v. 288, Dec. 18/25, 1980: 634–635. Q1.N2, v. 288

"Can the new US Administration be embarrassed into mounting a mission to Halley's comet when it passes through the Solar System in 1986?"

763
Dickson, David. US space research: Halley again? Nature, v. 292, July 9, 1981: 102. Q1.N2, v. 292

"A faint glimmer of hope that there may, after all, be a mission to Halley's comet filtered from the House of Representatives last week."

764
Dines, William H. Halley's Comet and the atmosphere. Symons's meteorological magazine, v. 45, June 1910: 88–89. QC851.M18, v. 45

Negative findings from a series of balloon ascents made May 17–21 in southern England.

765
Dines, William H. Meteorological observations during the passage of the earth through the tail of Halley's Comet. Nature, v. 83, June 9, 1910: 427. Q1.N2, v. 83

Reports, in a letter to the editor, his conclusion (based on balloon findings) that the comet's tail apparently had no effect on the temperature of the upper air.

766
Dines, William H. Observations on the upper atmosphere during the passage of the earth through the tail of Halley's Comet. *In* British Association for the Advancement of Science. Report of the eightieth meeting ... Sheffield, 1910, August 31–September 7. London, J. Murray, 1911. p. 544. Q41.B8, 1910

Summary of a paper read Sept. 6. "This report gave the results obtained from thirteen ascents of registering balloons from Ditcham Park, Pyrton Hill, and Manchester. The records do not show any result that can reasonably be put down to the action of the comet ..."

767
Dionis du Séjour, Achille P. Essai sur les comètes en général, et particulièrement sur celles qui peuvent approcher de l'orbite de la terre. A Paris, Chez Valade, M. DCC. LXXV. xxiv, 364 p. fold. plate.
MBAt; MH; MiU; NN; NNC; NWM; OGK; OkU; PPAN; WU

The comet of 837 is discussed on p. 9–11, 43, and 115.

In section 11, "Notice des différentes comètes dont on a determiné les orbites," the following appearances of Halley's Comet are treated:

837: p. 275–276;
1301: p. 278;

1456: p. 279–280;
1531: p. 281;
1607: p. 288–289;
1682: p. 298–299; and
1759: p. 315–318.

768
Dittrich, Arnošt. Kometa Halleyova. V Plzni, Dr. A. Batěk, 1907. 81–96 p. (Illustrované přednášky, čis. 82/83)

769
Divine, Neil. Numerical models for Halley dust environments. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP–174) p. 25–30. illus.

NASA accession no. N82–23098.

References (9): p. 30.

"The algebra, parameter values, and sample results of a Reference Model for the dust environment of Comet P/Halley are presented."

—— ——— Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. 6 p. illus. (Cometary Science Team preprint series, no. 21)

References (9): p. 6.

770
Divine, Neil. A simple radiation model of cometary dust for P/Halley. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP–174) p. 47–53. illus.

NASA accession no. N82–23101.

References (9): p. 53.

"Algebra, parameter values, and sample results for a simple model of the radiation from the dust environment of comet P/Halley are presented."

—— ——— Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. 7 p. illus. (Cometary Science Team preprint series, no. 22)

References (9): p. 7.

771
Dix, Irving S. The comet. *In his* The comet and other verses. Carbondale, Penna., Press of Munn's Review [1910] p. 7–8. PS3507.I92C6 1910

The poem was written on the return of Halley's Comet in 1910.

772
Dixon, Don. [Halley's Comet] *In his* Universe. Boston, Houghton Mifflin Co., 1981. p. 95–97. illus. (part col.) QB68.D59

Brief text is accompanied by the author's painting of the comet "as it would be seen from an orbiting station in 1986," and a reproduction of a photograph made at the Lowell Observatory, Flagstaff, Ariz., on May 19, 1910, with computer enhancement and color produced by the picture processing laboratory of the Kitt Peak National Observatory. The enhanced photograph, also reproduced in *Fire of Life: The Smithsonian*

Book of the Sun, p. 78 ([Washington, D.C.] Smithsonian Exposition Books; distributed by W. W. Norton, New York [1981] QB521.F57), is available as a large poster from Kitt Peak National Observatory (see item 532).

773
Dobrovol′skiĭ, Oleg V. Prognoz absoli͡utnogo bleska komet Kopfa (1982k) i Gallei͡a (1982i). *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 303, 25 mart 1983: 2–3. illus. DN-Ob

774
Dobrovol′skiĭ, Oleg V., *and* P. Egibekov. Skorost′ dezintegrat͡sii komet na raznykh geliot͡sentricheskikh orbitakh. *In* Astrometrii͡a i astrofizika. vyp. 12. Kiev, "Naukova dumka," 1971. p. 73–78. QB461.A767, no. 12
References (3): p. 78.

Considers the rate of disintegration of a cometary nucleus as a function of the orbital elements. The lifetime of a nucleus is shown to be close to 1,000 years for an Encke-type comet and about 100,000 years for a Halley-type comet.

775
Documents sur les courants météoriques: Orionides. Relations géométriques entre l'orbite de la Comète de Halley et l'orbite de la terre. Documentation des observateurs, 8. année, oct. 1955: [1]–[4] illus. ICU-Y

776
[Doerfel, Georg S.] Eilfertige Nachricht, von dem itzund am Himmel stehenden neuen Cometen, welcher am 15. Augusti dieses 1682sten Jahres zum erstenmahl, zu Plauen in Voigtlande, ist gesehen worden. [Plauen] Daselbst gedruckt und zu finden bey J. C. Meisen [1682] [4] p. illus.

Held by the British Library under shelfmark 8560. bbb. 7. (15.). Curt Reinhardt, in his *Mag. Georg Samuel Dörffel, ein Beitrag zur Geschichte der Astronomie im 17. Jahrhundert*, p. 10 (Plauen i.V., F. E. Neupert, 1882), ascribes a copy to the university library at Halle.

A cut depicting a comet appears on the title page.

777
Doerfel, Georg S. Observationes des Cometen A. 1682 zu Plauen im Voigtlande. *In* Reinhardt, Curt. Mag. Georg Samuel Dörffel, ein Beitrag zur Geschichte der Astronomie im 17. Jahrhundert. Plauen i. V., F. E. Neupert, 1882. p. 55–57. CtY; ICRL; NjP

Observations made Aug. 15–Sept. 10, taken from a letter dated Sept. 18/28 sent to Gottfried Kirch.

778
Doig, Peter. Halley's Comet and the mass of Pluto. *In* British Astronomical Association, *London.* Journal, v. 53, Mar. 1943: 96–97. QB1.B75, v. 53

Comments on Richardson's essay (item 2544).

779
Dominik, Hans. Vom Halleyschen Kometen. März, 4. Jahrg., 3. Mai 1910: 220–227. AP30.M15, v. 4

Also published as "Der Halleysche Komet" in *Der Türmer*, 12. Jahrg., Juni 1910, p. 366–370 (AP30.T8, v. 12).

780
Donini, D. C. Sulla cometa di Halley. Conferenza tenuta nel Teatro delle Associazioni cattoliche di Treviglio il 12 maggio 1910. Treviglio, Tip. Messaggi, 1910.

781
Donitch, Nicolas. Observations du spectre de la comète de Halley à Starya Doubossary. *In* Akademii͡a nauk SSSR. Izvi͡estīi͡a Imperatorskoĭ akademīi nauk, 6. ser., t. 10, 1 okt. 1916: 1203–1218. AS262.A624, s. 6, v. 10

Bibliographic footnotes.

782
Don't get excited! Chicago will be here long after the comet has left us. Chicago Sunday tribune, v. 69, May 8, 1910, pt. 7: [4]–[5] illus. N&CPR

"Ever since the world began there have been comet scares and rumors of scares, awesome visions and terrifying predictions of impending disaster, weird prophecies by weirder prophets that have struck terror to the hearts of the susceptible and sent the conscience stricken to their knees in pleas for pardon and yet nothing has happened more serious than the fright itself."

783
Doolittle, Charles L. Halley's Comet. Popular science monthly, v. 76, Jan. 1910: 5–22. illus., ports. AP2.P8, v. 76

784
Doolittle, Charles L. Halley's Comet. Science, new ser., v. 30, Dec. 10, 1909: 855. Q1.S35, n.s., v. 30

Substance of a paper read at a meeting of the American Philosophical Society on November 19, 1909.

785
Dooling, Dave. Europe's comet mission proceeds despite U.S. Space world, v. R-3-207, Mar. 1981: 13–14. TL787.S72, 1981

Reprinted from the *Huntsville Times* (Alabama).

"With or without the United States, Europe plans to visit Halley's comet in 1986."

786
Dornier-System GmbH. Comet Halley probe study; study on use of ISEE-B platform as probe for ESA/NASA cometary mission. Final report. v. 1. Technical results. Friedrichshafen, 1979. 290 p. illus.

NASA accession no. N80–30362.
References (12): p. 255–256.
Study manager: Wolfgang Trogus.

787
Doublet, Édouard L. A propos de la réapparition de la comète de Halley. Revue philomathique de Bordeaux et du sud-ouest, 12. année, sept./déc. 1909: 215–227. AP20.R63, v. 12

787a

Douglass, Andrew E. Halley's Comet. El cometa de Halley. *In* Tucson daily citizen. The Tucson citizen, commemorating the opening of the Tucson and West Coast of Mexico Railroad, Thursday, May 5, 1910, Tucson, Arizona. [Tucson, Tucson Print. and Pub. Co., 1910] p. [16]–[17] port. F819.T9T94

English and Spanish.

788

Draper, *Miss* E. Halley's comet—1760. Southern literary messenger, v. 2, Dec. 1835: 9–10. AP2.S82, v. 2

Poem.

Reprinted in the *William and Mary Quarterly*, v. 21, Apr. 1913, p. 290–291 (F221.W71, v. 21).

789

Dreifacher Kern des Halleyschen Kometen. Sirius, 43. Bd., Dez. 1910: 283. DN-Ob

Excerpt from a letter from Prof. I. Ketkovich at Ryazan, who on May 28 observed that the nucleus seemed to consist of three smaller nuclei.

790

Drummond, Jack D. [Studying Halley meteors] Sky & telescope, v. 62, Aug. 1981: 117–118. QB1.S536, v. 62

Letter to the editor suggesting the collection and analysis of observations of the Orionids and Eta Aquarids during the decade encompassing the return of Halley's Comet to seek data on the relation of meteors and comets.

A letter from Stephen L. Morgan, published in the October issue, p. 304, notes that the International Meteor Research Network is organizing just such a project.

See also Drummond's remarks on the meteor showers associated with P/Halley in his "Earth-Orbit-Approaching Comets and Their Theoretical Meteor Radiants," in *Icarus*, v. 47, Sept. 1981, p. 501, and Table I, p. 502–503 (QB1.I3, v. 47).

791

Dubi͡ago, Aleksandr D. The determination of the orbits of meteors. *In his* The determination of orbits. Translated from the Russian by R. D. Burke, G. Gordon, L. N. Rowell, F. T. Smith, the RAND Corporation. New York, Macmillan Co., 1961. p. 356–396. illus. QB355.D813

In showing how to calculate the coordinates of a radiant from orbital elements, the author uses as an example (p. 395–398) the two showers associated with Halley's Comet—the May Aquarids and the October Orionids.

This chapter was originally published as "Opredelenie orbit meteorov" in the author's *Opredelenie orbit*, p. [326]–364 (Moskva, Gos. izd-vo tekhniko-teoreticheskoĭ literatury, 1949. QB355.D8).

792

Dubi͡ago, Dmitriĭ I. Beobachtungen auf den Kaiserl. Universitätssternwarten zu Kasan. a) Observations de planètes et de comètes faites à l'equatorial de

0.30 m de l'observatoire Engelhardt par M. W. Baranow. Astronomische Nachrichten, Bd. 185, Nr. 4418, 9. Juni 1910: columns 21–24. QB1.A77, v. 185

Includes observations of Halley's Comet made Nov. 21 – Dec. 14, 1909.

793

Dubi͡ago, Dmitriĭ I. Beobachtungen auf der Sternwarten der Kaiserlichen Universität Kasan. Astronomische Nachrichten, Bd. 189, Nr. 4519, 28. Aug. 1911: columns 113–136. QB1.A77, v. 189

Includes observations of Halley's Comet made at the Engelhardt observatory Jan. 29 – June 8 by V. Baranov (columns 113–114, 123–124) and at the university observatory Jan. 30 – June 2 by A. Mikhaĭlovskiĭ (columns 133–134), and a report entitled "Passage de la comète Halley sur le disque du soleil" (columns 135–136).

794

Dubi͡ago, Dmitriĭ I. Halleyscher Komet 1909 c. Astronomische Nachrichten, Bd. 183, Nr. 4372, 1. Dez. 1909: columns 63–64. QB1.A77, v. 183

Observations made Nov. 15 with the 12-inch equatorial at the Engelhardt observatory, Kazan.

795

Dubinin, É. M., P. L. Izraĭlevich, I. M. Podgornyĭ, and S. I. Shkolʹnikova. Magnitnyĭ khvost i ėlektrodinamicheskie sily v komete Gallei͡a (analiz laboratornykh i nabli͡udatelʹnykh dannykh). Kosmicheskie issledovanii͡a, t. 18, noi͡abrʹ/dek. 1980: 907–913. illus. QB500.K63, v. 18

References (16): p. 913.

An English translation, "The Magnetic Tail and Electrodynamic Forces in Halley's Comet (an Analysis of Laboratory and Observational Data)," appears in *Cosmic Research*, v. 18, May 1981, p. 642–647 (QC801.K613, v. 18).

796

Dubinin, É. M., P. L. Izraĭlevich, *and* I. M. Podgornyĭ. Raspredelenie magnitnogo poli͡a v khvoste komety Gallei͡a, vytekai͡ushchee iz kinematiki plazmennogo obrazovanii͡a. Astronomicheskiĭ zhurnal, t. 59, vyp. 5, 1982: 1006–1011. illus. QB1.A47, v. 59

References (14): p. 1011.

"The distribution of directions of magnetic field vectors is obtained from the values of accelerations of a plasma condensation in the comet Halley tail. The field strength has a maximum near the tail boundary and decreases rapidly inside the tail. This implies the existence of a magnetic barrier near the boundary. The chart of the magnetic field directions in the comet Halley tail is obtained. It is in good agreement with the laboratory model of the induced magnetosphere."

An English translation by Edward U. Oldham, "Magnetic Field Distribution in the Tail of Halley's Comet Found From the Kinematics of a Plasma Formation," appears in *Soviet Astronomy*, v. 26, Sept./Oct. 1982, p. 608–611 (QB1.A4713, v. 26).

797

Düvell, Fritz, *and* Franz Diederich. Kometen, Wissenschaft und Aberglaube. Mit Bildnissen Edmund Halleys und des Bauernastronomen

Palitzsch und 28 Abbildungen im Text. Dresden, Kaden, 1910. 119 p. illus., ports. CSdS; ICJ

798

Duffett-Smith, Peter. [Calculating the position of Halley's comet at the beginning of the year 1986] *In his* Practical astronomy with your calculator. 2d ed. Cambridge [Eng.] New York, Cambridge University Press [1981] p. 125–127. QB62.5.D83 1981

799

Duffield, Charles E. the comet. Two step march. Chambersburg, Pa. [1910] 5 p. M28.D

For piano.

Cover design in color.

800

Dullenkopf, P., A. Glasmachers, J. W. Klein, *and* J. Melbert. Analoge Signalverarbeitung im Staubteilchen-Experiment der GIOTTO-Mission. *In* Gemeinsame Tagung des U.R.S.I.-Landesausschusses in der Bundesrepublik Deutschland und der Fachausschüsse Informations- und Systemtheorie und Wellenausbreitung der NTG, *Kleinheubach, 1982*. Vorträge und Berichte. Hrsg. vom Fernmeldetechnischen Zentralamt. Darmstadt, 1983. (Kleinheubacher Berichte, Bd. Nr. 26) p. 87–91. illus.

AIAA accession no. A83–23384.

References (4): p. 91.

English abstract.

On the design of the electronic system for processing signals from the Particulate Impact Analyzer.

801

Dumas, Maurice. Het vergaan der wereld. (De komeet van Halley.) Amsterdam, P. Roem Jzn., 1910.

Words and music.

802

Dumouchel, Étienne. Auszug aus einem Schreiben des Herrn Dumouchel, Directors der Sternwarte des Collegio Romano in Rom. Astronomische Nachrichten, 12. Bd., Nr. 288, 26. Aug. 1835: columns 415–416. QB1.A77, v. 12

In French.

Reports sighting the comet on Aug. 5, near the Crab Nebula, and again on the 6th, by which time it had moved eastward.

803

Dumouchel, Étienne. Beobachtungen des Halleyschen Cometen in Rom auf der Sternwarte des Collegio Romano. Astronomische Nachrichten, 13. Bd., Nr. 309, 1. Juni 1836: columns 341–344. QB1.A77, v. 13

In French, with some comments in German by the editor.

Concerns observations made Aug. 5 and 6, 1835, and Mar. 17–19, 20–21, and 23–24, 1836.

804
Dumouchel, Étienne. Schreiben des Herrn Dumouchel, Directors der Sternwarte auf dem Collegio Romano, an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 293, 28. Nov. 1835: columns 71–74. plate.
QB1.A77, v. 13

In French, with an afterword in German by the editor. The plate shows the position of the comet on Aug. 5, 6, and 7. A brief note concerning Dumouchel's observations appears in the issue of Oct. 17 (Nr. 289), column 16.

805
Dunelm, Handley. Halley's Comet. Observatory, v. 33, Jan. 1910: 73.
QB1.O2, v. 33

Poem, copied from the *Yorkshire Post* of Dec. 7, 1909.

806
Dunkle, Terry. To catch a comet. Science 82, v. 3, Oct. 1982: 44–52. col. illus.
Q1.S354, v. 3

"Illustrations by Greg Hargreaves/Hellman Design."

Describes the activities of three astronomers who spent four nights in February 1982 at the 107-inch telescope of McDonald Observatory in an unsuccessful attempt to pick up Halley's Comet.

807
Dunn, Frederic S. The Julian star. Classical weekly, v. 3, Jan. 8, 1910: 87.
PA1.C8, v. 3

Shows that Duruy's identification of the "hairy star" that appeared at Caesar's death with Halley's Comet must be in error.

The article was reprinted in *Popular Astronomy*, v. 18, Mar. 1910, p. 164–165 (QB1.P8, v. 18).

808
Dunthorne, Richard. A letter from Mr. Rich. Dunthorne to the Rev. Dr. Long, F.R.S. Master of Pembroke-Hall in Cambridge, and Lowndes's professor of astronomy and geometry in that university, concerning comets. *In* Royal Society of London. Philosophical transactions. v. 47; 1751/52. London, Printed for C. Davis, Printer to the Royal Society, over against Gray's-Inn-Gate in Holbourn, M.DCC.LIII. p. 281–288.
Q41.L8, v. 47 Rare Bk. Coll.

Read Nov. 14, 1751.

The letter, dated Cambridge, Oct. 5, 1751, quotes from a manuscript in the library of Pembroke College which includes "five tracts of different authors concerning comets." Among these is one entitled "Judicium de Stella Comata Anno Domini 1301," describing a comet, possibly Halley's, visible in the evening sky during September and October of that year. The text of the manuscript has been published in Lynn Thorndike's collection, *Latin Treatises on Comets Between 1238 and 1368*, p. 202–207 ([Chicago] University of Chicago Press [1950] QB41.T4).

809
Durant, Joseph H. "The comet" (schottische). Dedicated to the appearance of Halley's Comet May 18th 1910. [Brighton, Mass., 1910] [3] p. M31.D

Ms. For piano.

810

Der Durchgang der Erde durch den Schweif des Halleyschen Kometen. Sirius, 43. Bd., Juni 1910: 121–129. DN-Ob

Summarizes preliminary reports of observations made during the period May 17–26 at Vienna, Sonnwendstein, Berlin, Cologne, Potsdam, Königstuhl, and many other locations.

811

Dzērvītis, Uldis. Rendez-vous ar Halleja komētu. Zvaigžņotā debess, 1980./81. gadā ziema: 12–19. illus. DN-Ob

812

ESA comet-bound with or without NASA. Science news, v. 118, July 19, 1980: 38–39. illus. Q1.S76, v. 118

About the European Space Agency's plans for a Comet Halley flyby mission.

813

ESA develops Halley's Comet spacecraft. Aviation week & space technology, v. 116, Feb. 15, 1982: 133. illus. TL501.A8, v. 116

814

Az ESA Halley-szondájának gondjai. Élet és tudomány, 38. évf., 1983. IV. 22.: 506. Q44.E5, v. 38

On the Giotto mission.

815

ESA-NASA to launch Halley-Tempel 2 comet mission. Nature, v. 282, Nov. 22, 1979: 352. Q1.N2, v. 282

Brief news note.

816

ESA opts for own Halley Comet flyby. Aviation week & space technology, v. 113, July 14, 1980: 27. TL501.A8, v. 113

817

ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982*. Proceedings. Edited by P. Véron, M. Festou and K. Kjär. [Garching bei München, European Southern Observatory] 1982. 309 p. illus., col. plate.

Sixteen of the 30 constituent papers are separately listed in this bibliography.

818

Eadie, John D. Passage of Halley's Comet, May 18. Popular astronomy, v. 18, Aug./Sept. 1910: 445–446. QB1.P8, v. 18

Observations made on the evening of the 18th and the early morning of the 19th at Bayonne, N.J.

819

Eastman, Elaine G. Halley's Comet. Independent, v. 68, Apr. 21, 1910: 865. AP2.I53, v. 68

Poem.

820

Ebell, Martin. Ephemeride des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 184, Nr. 4411, 12. Mai 1910: columns 317–318; Bd. 185, Nr. 4423, 4436, 30. Juni, 24. Aug.: columns 111–112, 323–324; Bd. 186, Nr. 4450, 4462, 29. Okt., 22. Dez.: columns 157–158, 367–370; Bd. 187, Nr. 4476, 27. Feb. 1911: columns 189–190; Bd. 188, Nr. 4492, 4506, 15. Apr., 20. Juni: columns 61–62, 313–314. QB1.A77, v. 184–188

For the periods May 29–July 16, July 16–Sept, 18, Sept. 18–Nov. 5, Nov. 5–Dec. 31, Dec. 31, 1910–Mar. 5, 1911, Mar. 5–Apr. 30, Apr. 30–July 3, and July 3–Aug. 4.

The tables published in Nr. 4476 and Nr. 4492 are supplemented by quotations from letters received by the author from Barnard describing observations made Jan. 8 and Mar. 19, 1911.

Ebell's data for Aug. 1–Sept. 18, 1910, appear in *Sirius*, 43. Bd., Aug. 1910, p. 178, and for June 1–July 3, 1911, under the heading "Ephemeris of Halley's Comet" in *Popular Astronomy*, v. 19, June/July 1911, p. 368–369 (QB1.P8, v. 19).

821

Ebell, Martin. Gelegentliche Beobachtungen über Helligkeit und Gestalt von Kometen. Astronomische Nachrichten, Bd. 188, Nr. 4499, 20. Mai 1911: columns 199–200. QB1.A77, v. 188

Includes observations of Halley's Comet made at Kiel from May 21 through June 6 and 7, when it could no longer be found with opera glasses.

822

Ebell, Martin. Wie hell wird der Halleysche Komet im Mai 1910 werden? Astronomische Nachrichten, Bd. 184, Nr. 4400, 4. Apr. 1910: columns 139–142. QB1.A77, v. 184

Predictions are based on observations made at the 1835/36 return.

823

Eberhard, Johann P. Abhandlung von den Kometen, besonders demienigen, der im Mai des ietzigen Jahres sichtbar gewesen ist. Halle, 1759. 43 p. plate.

Held by the Crawford Library of the Royal Observatory Edinburgh.

Probably extracted from the author's *Vermischte Abhandlungen aus der Naturlehre, Arzneygelahrheit und Moral*, 1. Th. (Halle, 1759).

824

Eberhart, Jonathan. Bound for Halley: surviving the unknown. Science news, v. 121, June 12, 1982: 391. Q1.S76, v. 121

Quotes Zdenek Sekanina addressing a COSPAR meeting in Ottawa on the problems involved in "predicting the pattern of dust, rock chips, ice grains and other particles expected to come from Halley's warming nucleus," in preparation for spacecraft encounters.

825

Eberhart, Jonathan. Pioneer Venus craft to study Halley. Science news, v. 124, July 9, 1983: 21. illus. Q1.S76, v. 124

The spacecraft's ultraviolet spectrometer will be able to study the amounts and production rates of various substances emitted by the comet as it approaches perihelion, and other instruments can observe the effects of the solar wind on the comet. Other spacecraft, such as the Pioneer 7 probe and ISEE-3, may contribute data to solar-wind interaction studies.

826

Eberhart, Jonathan. Recovery of Comet Halley reported. Science news, v. 122, Oct. 30, 1982: 277. illus. Q1.S76, v. 122

Brief report. Corrections appear in the Nov. 20 issue, p. 323.

827

Eckerskorn, Joseph. Der Komet kommt! Posse in einem Akt. Bonn a. Rh., A. Heidelmann [1910] 24 p. ([Heidelmann's] Theaterbibliothek, 321) NN

The scene takes place in May 1910, and the comet's threat is used in a plot to frighten a miserly landlord into behaving more generously toward some hard-up tenants.

828

Edberg, Stephen J. [Establishing seeing criteria for the International Halley Watch] Sky & telescope, v. 63, Jan. 1982: 5. QB1.S536, v. 63

Letter to the editor inviting experienced double-star observers to participate in a project to study astronomical seeing for the benefit of the International Halley Watch.

829

Edberg, Stephen J. Halley watch '86. Astronomy, v. 11, Mar. 1983: 18–22. col. illus. QB1.A7998, v. 11

Discusses methods to be used in observing the comet and how amateur astronomers can contribute.

830

Edberg, Stephen J. International Halley Watch amateur observers' manual for scientific comet studies. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1983. 2 v. illus., forms. (JPL publication 83–16)

Bibliography: pt. 1, p. B-1–B-5.

contents: pt. 1. Methods.—pt. 2. Ephemeris and star charts.

An extensive review by Dennis Di Cicco, entitled "A User's Guide to Halley's Comet," appears in *Sky & Telescope*, v. 66, Sept. 1983, p. 211–212 (QB1.S536, v. 66).

831

Edberg, Stephen J. "The International Halley Watch and the amateur's role in it." Comet news service, May 20, 1982: 3–4. DN-Ob

Report of a talk presented at the 1982 American Workshop on Cometary Astronomy, held May 1 at the Harvard-Smithsonian Center for Astrophysics.

832

Eddie, Lindsay A. Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 20, Jan.–Feb., Apr.–June 1910: 202–203, 247–248, 363–364, 427–430, 500–501; v. 21, Oct.: 53–54. QB1.B75, v. 20–21

Records observations made at Grahamstown, South Africa, Jan. 10–15, Jan. 26–Feb. 6, Apr. 14–16, Apr. 19–May 2, May 17–June 12, and June 20–July 14.

833
Eddington, *Sir* Arthur S. Halley's observations on Halley's Comet, 1682. Nature, v. 83, May 26, 1910: 372–373. facsim. Q1.N2, v. 83
Transcribes entries from a notebook found in the record room of the Greenwich observatory. The surviving pages record observations made Aug. 26, 29, 30, and 31, and Sept. 4, 8, and 9.

834
Eddy, Elford. Cupid's comet. How the young book-keeper's horoscope came true. *In* Los Angeles times. Illustrated weekly magazine, v. 15, May 22, 1910: 657. AP2.L815, v. 15
Short story.

835
Edmondson, Thomas W. Halley's Comet. *In* The New international year book, a compendium of the world's progress. 1909–10. New York, Dodd, Mead, 1910–11. p. 55–56; p. 66. plate. AE5.I64, 1909–10
The plate, facing p. 66 in the 1910 volume, reproduces an undated photograph of the comet (copyright by Van der Weyde, New York).

836
Edwards, Gus. The comet and the earth. F. Ziegfeld Jr's revue, Follies of 1910. Book by Harry B. Smith. Staged by Julian Mitchell. New York, J. H. Remick [1910] 5 p. M1508 Follies of 1910
For voice and piano.

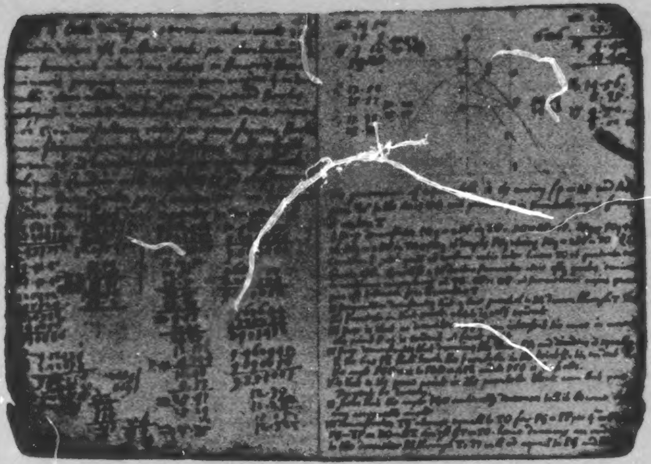
837
Efemérides del cometa de Halley. *In* Sociedad Astronómica de México. Boletín mensual, t. 9, enero, mayo de 1910: 5–6, 122–123. QB1.S55, v. 9

838
Eichenlaub, Jesse. 4 probes to Comet Halley. Astronomy, v. 11, Sept. 1983: 16–22. illus. (part col.) QB1.A7998, v. 11
Details on the Giotto, Planet-A, and VEGA 1 and 2 missions.

839
Eicher, David J. Waiting for Halley. Astronomy, v. 11, June 1983: 35–38. col. illus. QB1.A7998, v. 11
On observing prospects for 1985–86.

840
Eichler, Gregor. Beschreibung dess im Septembri vnd Octobri Anno 1607. erschienen Cometens. Leipzig, B. Voigt, 1608.
Zinner 4172.

841
Eichler, Gregor. Kurtze Beschreibung des Cometens, welcher in diesem 1607. Jahre im Ende des Septembris und Anfang des Octobris in der Himlischen



Halley recorded observations of his comet, which he saw late in the summer of 1682, in a notebook preserved among the Halley manuscripts in the collections of the Royal Greenwich Observatory. The text of his notes, together with this illustration and comments by Sir Arthur Eddington, was published in *Nature*, v. 83, May 26, 1910, p. 372–373. Eddington states that the volume is "of about octavo size; it appears to have been originally a college notebook. On the cover Halley has written 'Edmund Halley his Booke and he douth often in it Looke.' Part of the book contains neatly written notes (in English) on geometrical conics, with carefully drawn figures, chiefly written on alternate pages. The observations (in Latin) and calculations have been jotted down subsequently wherever there is room, and in many cases have been written over the original contents of the book . . . The observations, which must have been made with the naked eye, are almost entirely alignments with stars; they are, of course, too rough to have any scientific value now, but are of historic interest." He adds that Halley did not use them in determining the comet's orbit.

Shown here are, on the left, records of observations made Sept. 4, 1682, with their reductions, and, on the right, notes on the parabola.

BEST COPY AVAILABLE

Wage, Scorpion vnd anfang des Schützens sich hat nach der Sonnen Vntergang erzeiget. Zu Görlitz, J. Rhambaw [1607] [31] p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 73, and by the Herzog August Bibliothek Wolfenbüttel under shelfmark 42.8 Astron. (13).

842

Eigentliche Abbildung, dess am Himmel widerum herfürleuchtenden Comet- und Wunder-Sterns, wie solcher den 19. 29. Augusti, dises 1682. Jahrs, früh gegen Tag, ist anzuschauen gewesen. Augspurg, Gedruckt bey J. Koppmayer [1682] broadside (1 p.) illus.

The engraving shows a number of ladies and gentlemen in a meadow gazing at the comet before dawn; the waning moon and many stars are also seen. The same engraving was published by Koppmayer with only a caption (beginning "Eigentlicher Abriss dess entsetzlichē Cometstern"); a copy is held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C4. 45. It also appears as an illustration in Wagner's *Atmosphaera Sublunaris* (see item 2978).

843

Eigentliche Vorstellung des neu-entstandenen Cometen-Liechts, nach seinem Lauff, Stand, Art, Gestaltung und Eigenschafft, wie er erstes mal, den 15. Augusti, und so folgend nachgehends fast alltäglich gesehen und beobachtet worden, A. 1682. [Nürnberg, 1682] broadside (1 p.) illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C4. 43.

The engraving shows the comet being observed by a number of people, some using telescopes, at the private observatory of Georg Christoph Eimmart, located on the western part of the city wall of Nuremberg.

The second part of Johannes Classen's article, "15 Kometenflugblätter des 17. und 18. Jahrhunderts," in *Die Sterne*, 52. Jahrg., Heft 2, 1976, includes as plate 9 a reproduction of this broadside (reduced in size) and a transcription of the text on p. 113–114.

844

Einige Merkwürdigkeiten von dem gegenwärtigen Cometen. Hannoverische Beyträge zum Nutzen und Vergnügen, 34. Stück, 27. Apr. 1759: columns 529–536. AP30.H2, 1759

Signed T. M.

845

Eiseley, Loren C. The star dragon. I. *In his* The invisible pyramid. Woodcuts by Walter Ferro. New York, C. Scribner's Sons [1970] p. 7–12. illus. CB19.E38

The author's childhood recollections of being held up by his father to see Halley's Comet in 1910, and his lifelong anticipation of watching it upon its next return, recounted in these pages, emerge from time to time throughout the book. Two woodcuts depict the comet (on the title page and on p. [6]).

846

Eisenman, Allan R., *and* Robert W. Armstrong. CCD sensors for interplanetary spacecraft navigation and pointing control. Annual Rocky

Mountain Guidance and Control Conference, January 31 through February 4, 1981, Keystone, Colorado. Sponsored by Rocky Mountain Section, American Astronautical Society. San Diego, Calif., AAS Publications Office [1981] 13 p. illus. (AAS paper 81–021)

AIAA accession no. A81–32883.

References (8): p. 12–13.

"Requirements which influence sensor design are presented and a development example from the Jet Propulsion Laboratory's Proposed Halley Intercept Mission is explored."

847

The Electronic system of the Halley Multicolour Camera (HMC). Dornier post (English ed.), no. 2, 1983: 79–81. illus. (part col.)

By Hans Reffel (see inside back cover of issue).

848

The Elements of Halley's Comet. English mechanic and world of science, v. 91, Mar. 4, 1910: 103. T1.E5, v. 91

Letter to the editor signed "A fisherman's grandson" asking whether there is not something wrong with the figures given by Whitmell in the Feb. 4 issue (p. 11). The latter's reply appears in the Mar. 11 issue (p. 127). See also item 2924.

849

[Elements of the orbit of Halley's Comet] Observatory, v. 32, Oct. 1909: 402–403. QB1.O2, v. 32

850

Elgie, Joseph H. Halley's Comet. *In his* Star & weather gossip concerning the heavens, the atmosphere, the sea. London, 1915. p. 50–54. QB51.E4

850a

[Elgie, Joseph H.] [Halley's Comet] T. P.'s weekly, v. 13, Mar. 12, May 14, 1909: 336, 636; v. 15, Jan. 21, Mar. 11–Apr. 1, May 6–20, June 3–10, 1910: 82, 296, 340, 382, 402, 571, 613, 636, 701, 733; v. 16, Aug. 26: 269. Micro 27735

Contents: The expected comet.—The tardy comet.—The comet.—Halley's Comet.—Halley's transit.—"Halley's" in transit.—Earth and comet.—The comet.—The comet's tail.—The morning comet.—The ghost comet.—Halley's passing.—Halley's in Africa.

851

Ellerman, Ferdinand. Comet photographs. Camera craft, v. 17, Apr. 1910: 149. illus. TR1.C3, v. 17

Letter to the editor accompanying photographs taken on Mount Wilson of Comet 1910a (Jan. 30) and Halley's Comet (Jan. 29 and 30).

852

Ellerman, Ferdinand. An expedition to photograph a comet. *In* Astronomical Society of the Pacific. Publications, v. 22, Oct. 1910: 165–168. plates. QB1.A4, v. 22

The expedition went to Oahu to photograph Halley's Comet during the period April–mid-June 1910. Photographs of the comet taken May 8 and 10 are reproduced.

853
Ellerman, Ferdinand. The Society's expedition to Hawaii for photographing Halley's Comet. *In* American Astronomical Society. Publications. v. 2. [Ann Arbor, Mich.] 1916. p. 15–16. QB1.A27, v. 2

Abstract of a paper presented at the 11th meeting of the Astronomical and Astrophysical Society of America, Aug. 17–19, 1910, in Cambridge, Massachusetts. An even shorter summary appears in *Science*, new ser., v. 32, Dec. 16, 1910, p. 877 (Q1.S35, n.s., v. 32).

854
Elliott, Elizabeth S. Green. The visitor in the morning sky: an impression of Halley's Comet in the early morning heavens, with Venus and the decrescent moon as its attendants. Harper's weekly, v. 54, May 21, 1910: 3. illus. AP2.H32, v. 54

Drawing with caption.

855
Elson, Henry W. Halley's Comet. *In his* Comets, their origin, nature and history. New York, Sturgis & Walton Co., 1910. p. 46–53. illus. QB721.E4

856
Emanuelli, Pio. Come si vide la cometa d'Halley nell'Eritrea. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 5, dic. 1911: 571–572.

857
Emanuelli, Pio. Cometa di Halley. *In his* Il cielo e le sue meraviglie; atlante di 150 tavole, riproduzioni di fotografie celesti ottenute con i più grandi telescopi moderni. Milano, U. Hoepli [1934] p. 126–[133] illus. QB68.E6

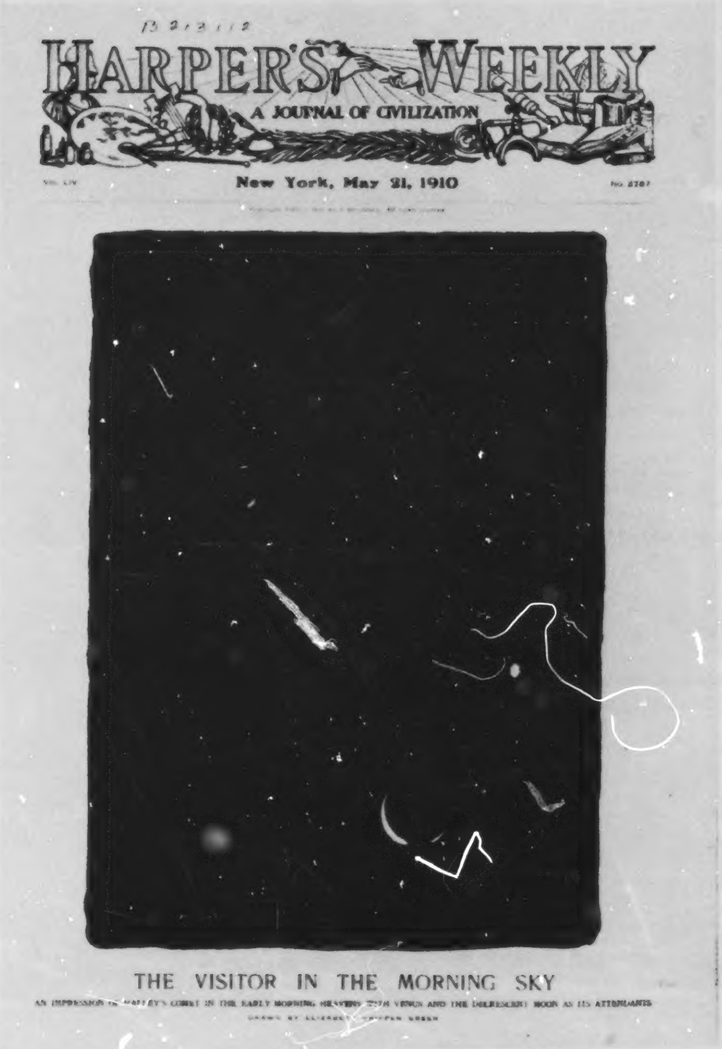
Bibliography: p. 126, 128, 130, 132.

Plates, accompanied by descriptive text, reproduce photographs taken at Honolulu, May 6, 1910; Santiago de Chile, May 6 and 7; Flagstaff, Ariz., May 13; and Mount Wilson, Calif., May 8.

The comet is also discussed on p. xxvi of the introductory essay.

858
Emanuelli, Pio. Sulla velocità che ha al perielio ed all'afelio la cometa di Halley. *In* Pontificia accademia delle scienze, *Rome*. Atti della Pontificia accademia romana dei nuovi Lincei. t. 63; 1909/10. Roma, 1910. p. 79–82. AS222.R7, v. 63

859
Emanuelli, Pio. Sur la date du passage au périhélie de la comète de Halley. Gazette astronomique, 2. année, no 24, 30 nov. 1909: 89. QB1.G3, v. 2



HARPER'S WEEKLY

A JOURNAL OF CIVILIZATION

VOL. LIV New York, May 21, 1910 No. 2787

THE VISITOR IN THE MORNING SKY

AN IMPRESSION OF HALLEY'S COMET IN THE EARLY MORNING HEAVENS WITH VENUS AND THE DECRESCENT MOON AS ITS ATTENDANTS

DRAWN BY ELIZABETH SHIPPEN GREEN

Those who made the effort to rise before dawn on May 6, 1910, were rewarded by this striking view of Halley's Comet, the planet Venus, and a 27-day-old moon. The artist, Elizabeth Shippen Green (Mrs. Huger Elliott), studied at the Pennsylvania Academy of Fine Arts and with Howard Pyle. Primarily a magazine and book illustrator, she was also known for her paintings of children. At the time this drawing was produced, she was on the staff of *Harper's Monthly Magazine*.

860

Emanuelli, Pio. Sur la rencontre probable de la terre avec la queue de la comète de Halley. Gazette astronomique, 3. année, no 25, 27/28, 31 déc. 1909, 28 [fév.] 1910: 1, 17–18. QB1.G3, v. 3

Includes detailed ephemeris and table of geocentric positions for the period May 18–20.

861

Emerson, Edwin. Comet lore: Halley's Comet in history and astronomy. New York, Printed by the Schilling Press [c1910] 144 p. plates, port. QB723.H2E6

Sensational and self-contradictory.

862

Emerson, Edwin. King Edward and the comet. New York American, May 17, 1910: 20. N&CPR

Reprinted in the *Washington Post*, May 18, p. 4.

863

Encke, Johann F. [Auffindung des Halleyschen Kometen] *In* Prussia. Allgemeine preussische Staats-Zeitung, 24. Aug. 1835: 957. J7.G185, 1835

Announces sighting of the comet by Georg K. F. Kunowsky about 1 a.m. Aug. 22 and gives its position, which agreed well with Rosenberger's calculations. Reported in the London *Times*, Aug. 29, p. 3.

864

Encke, Johann F. Beobachtungen des Halley'schen Cometen auf der Berliner Sternwarte. *In* Akademie der Wissenschaften, *Berlin*. Mathematische Abhandlungen aus dem Jahre 1836. Berlin, 1838. p. 103–116.

Provides details of observations made Aug. 22, 1835–Mar. 19, 1836.

865

Encke, Johann F. Schreiben des Herrn Professors und Ritters Encke an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 305–306. QB1.A77, v. 12

Reports that the comet was first seen in Berlin by Kunowsky on the night of Aug. 21/22.

866

Encke, Johann F. Schreiben des Herrn Professors und Ritters Encke, Directors der Berliner Sternwarte, an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 310, 11. Juni 1836: columns 349–354. QB1.A77, v. 13

Observations made Aug. 22–Nov. 16, 1835, and Mar. 18–19, 1836.

867

Encrenaz, T., Michel Combes, J. F. Crifo, Eric Gérard, J. P. Bibring, *and* J. Crovisier. Infrared spectroscopy of Comet Halley. *In* American Astronomical Society. Bulletin, v. 13, no. 3, 1981: 707. QB1.A255, v. 13

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 13–16, 1981, at Pittsburgh, Pennsylvania.

868

Encrenaz, T., J. Crovisier, Michel Combes, *and* J. F. Crifo. A theoretical study of Comet Halley's spectrum in the infrared range. Icarus, v. 51, Sept. 1982: 660–664. illus. QB1.I3, v. 51

References (13): p. 664.

"Synthetic spectra of Comet Halley between 2.5 and 15 μm are calculated on the basis of current cometary models. This study shows that molecules which are most likely detectable in the infrared range include H_2O, CO, CO_2, CH_4, NH_3, N_2H_4, and H_2CO. The flux emitted by these molecules, mostly due to resonant scattering, should be sufficient for detection by a flyby mission."

868a

Endres, Edmund. Vier Märsche für Pianoforte. Giessen, Challier, 1913.

Contents: Halley'sche Komet.—Inf.-Reg. 116 "Kaiser Wilhelm."—Unter der Fahne.—Heil! Deutschland Heil!

869

Endrey, Elemér. Halley üstököse a régi magyar irodalomban. Az Időjárás, 14. évf., 1910. márc.: 105. DAS

Quotes a record of the 1682 apparition left by János Csányi of Sopron.

870

Éphéméride de la recherche de la Comète de Halley. *In* Société belge d'astronomie. Bulletin, 14. année, fév. 1909: 87. QB1.S7, v. 14

Covers the period Feb. 7, 1909–Jan. 2, 1910.

871

Éphémérides de la comète de Halley. *In* Société astronomique de France. Bulletin, 23. année, août 1909: 366–367. illus. QB1.S6, v. 23

An extract for the period Aug. 5–Dec. 3, 1909, from Matkevich's ephemeris published in *Astronomische Nachrichten*, Nr. 4330, accompanied by a sketch of the comet's path in the heavens.

872

[Ephemeris of Halley's Comet] English mechanic and world of science, v. 90, Aug. 27, Oct. 1, Oct. 29, Nov. 26, Dec. 31, 1909, Jan. 28, 1910: 80, 201, 297, 391, 507, 601; v. 91, Feb. 25, Mar. 25, Apr. 29, May 27, June 24: 74–75, 165, 279, 367–368, 462. T1.E5, v. 90–91

Data and brief comments are included in the monthly "Astronomical Notes."

873

Ephemeris of Halley's Comet. Popular astronomy, v. 18, Jan.–Feb., Apr.–May 1910: 50–51, 116–117, 242, 304–305. illus. QB1.P8, v. 18

Covering the periods Jan. 2–30, Feb. 3–Mar. 31, Apr. 1–May 26, and May 27–June 27. Accompanying the first of the series is a diagram entitled "Apparent Paths of Halley's Comet, Mars and Saturn during January and February, 1910."

874

Erber, Felix. Schweifsterne. Deutscher Hausschatz in Wort und Bild, 36. Jahrg., 7. Heft, 18. Dez. 1909: 270–272. illus. AP30.D5, v. 36

Most of the illustrations and the last quarter of the article relate to Halley's Comet.

875

Ernst, Emil H. Beobachtungen am Kreuzstabmikrometer des Steinheil-Sechszöllers der Königstuhl-Sternwarte Heidelberg. Astronomische Nachrichten, Bd. 186, Nr. 4462, 22. Dez. 1910: columns 365–366.
QB1.A77, v. 186

Includes observations of Halley's Comet made Jan. 7–May 23, 1910.

876

Ernst, Martin. Die Helligkeit des Halleyschen Kometen. Astronomische Nachrichten, Bd. 187, Nr. 4478, 27. Feb. 1911: columns 303–304.
QB1.A77, v. 187

877

Ernst, Martin. Jasność komety Halleya w czasie jej ostatniego powrotu. (z 3 tablicami) *In* Lvov. Uniwersytet. Księga pamiątkowa ku uczczeniu 250-tej rocznicy Założenia Uniwersytetu lwowskiego przez Króla Jana Kazimierza r. 1661. Wydana przez członków uniwersytetu. t. 1. Lwów, Nakładem Uniwersytetu lwowskiego, 1912. 25 p. (10th group) plates.
CU; CtY; IU; InU; MH; ViU; WU

Includes tables showing magnitude estimates of the comet and of its nucleus, arranged by observer and by date.

878

Ernst, Martin. O kometach i komecie Halleya. Lwów, Macierz Polska, 1910. 29 p. (Biblioteka Macierzy Polskiej, nr. 54)

879

Error concerning the expected comet corrected. Gentleman's magazine, v. 25, Dec. 1755, suppl.: 584. illus. AP4.G3, v. 25 Rare Bk. Coll.

"Graticola" corrects a statement attributed to John Wesley (in his pamphlet, *Serious Thoughts Occasioned by the Late Earthquake at Lisbon*) to the effect that when the comet of 1682 returns in 1758, as predicted by Halley, it will move with the earth in its orbit and set it on fire, and G. Witchell describes the comet's predicted path as it approaches perihelion and its relation to the earth's orbit.

880

Ershkovich, Alexander I. On the magnetic field in the tail of Comet Halley. Moon and the planets, v. 25, Dec. 1981: 521–522.
QB581.M65, v. 25

Letter to the editor.

References (6): p. 522.

"The method of evaluation of the cometary magnetic field proposed by Podgorny *et al.* (1980) is shown not to be self-consistent. An alternative method is discussed."

881

Die erste Auffindung des Halleyschen Kometen. Sirius, 43. Bd., März 1910: 65–66.
DN-Ob

Tells of finding Halley's Comet on a photograph taken Aug. 24, 1909, at the Khedivial Observatory at Helwan and mentions observations made at the Lick Observatory on Dec. 14, 15, 17, and 18.

882

Esclangon, Ernest. Étude sur l'orientation de la queue de la comète de Halley. Sa rencontre avec la terre en mai 1910. *In* Bordeaux. Observatoire. Annales. t. 15. [1. ptie. Mémoires] Paris, Gauthier-Villars, 1915. p. 1–33. plates. QB4.B72, v. 15

The plates reproduce sketches and photographs of the comet on May 10, 12, and 29, and details of the head on Feb. 13, Apr. 26, and May 20, 25, and 31, 1910. The author concludes that the earth did not pass through the comet's tail. This study is briefly reported under the heading "The Tail of Halley's Comet" in the *Observatory*, v. 39, Mar. 1916, p. 142 (QB1.O2, v. 39), and as "De Komeet van Halley" in *Hemel en dampkring*, 13. jaarg., apr. 1916, p. 180–181 (QB1.N43, v. 13).

883

Esclangon, Ernest. Observations de comètes, faites à l'observatoire de Bordeaux (équatorial de 0^m, 38 d'ouverture). Bulletin astronomique, t. 29, mars 1912: 100–103. QB1.B9, v. 29

Halley's Comet: p. 100–101. Observations were made during Jan. 6–June 10, 1910. Comparison stars are listed on p. 103. See also *Annales* de l'observatoire de Bordeaux, t. 16, 2. ptie., p. 6–7 (Paris. Gauthier-Villars, 1917. QB4.B72, v. 16).

884

Esclangon, Ernest. Observations de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 17 mai 1910: 1222–1224. illus. Q46.A14, v. 150

Describes the comet's appearance during observations made at Bordeaux on May 11 and 16. Sketches show the appearance of jets emerging from the nucleus as observed on Apr. 27, May 10, and May 11. See also his "Quelques observations de la comète de Halley avant sa conjunction" in *Cosmos*, t. 62, 4 juin 1910, p. 639–640.

885

Esclangon, Ernest. Sur le passage de la terre dans la queue de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 18 juil. 1910: 188–190. illus. Q46.A14, v. 151

886

Esclangon, Ernest. Sur les transformations de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus des séances, t. 150, 2 mai 1910: 1095–1096. Q46.A14, v. 150

Describes an observation made at Bordeaux on Apr. 27 and compares the comet's appearance with that noted the previous month.

887

Euler, Johann A. Meditationes de pertvrbatione motvs cometarvm ab attractione planetarum orta. Dissertatio ab Academia Scientiarum Petropolitana praemio affecta d. XXIII. Septembris 1762. Petropoli, Typis Academiae Scientiarum, MDCCLXII. 46 p. fold. plate. MdAN; NNC

"Evolvtio calcvli pro cometa anni 1682, quatenus eius motus ab actione Iouis est perturbatus": p. 32–42. "Appendix: De perturbatione Cometae An. 1759. visi ab actione Telluris orta": p. 42–45.

888

L'Europe au rendez-vous de la comète de Halley. Sciences & avenir, oct. 1980: 11–13. illus.

889

European group agrees to comet mission role. Aviation week & space technology, v. 110, Feb. 26, 1979: 20–21. TL501.A8, v. 110

ESA has tentatively agreed to 15 percent participation in the comet mission which calls for the Aug. 1985 space-shuttle launch of a vehicle that would eject a probe into the nucleus of Halley's Comet and then rendezvous and dock with Comet Tempel 2.

890

European payload. Aviation week & space technology, v. 114, Feb. 2, 1981: 23. TL501.A8, v. 114

Brief report on the selection by ESA of an "all-European science payload management team" for its Halley's Comet intercept mission.

891

European scientific spacecraft to explore Halley's Comet. *In* European Space Agency. ESA newsletter, no. 21, Sept. 1980: 3. illus.

On the Giotto project.

Also published in *COSPAR Information Bulletin*, no. 89, Dec. 1980, p. 47–48.

892

European Space Agency. Giotto: Comet Halley fly-by (in association with GEOS–3). Preliminary study report. [Paris?] 1980. 43 p. illus. (*Its* SCI(80)3)

893

European Space Agency. Giotto: Comet Halley flyby. Report on the Phase A study. [Paris?] 1980. 86 p. illus. (*Its* SCI(80)4)

NASA accession no. N80–30346.

894

European Space Agency. Giotto mission. [Paris, Synelog—L'Edition artistique, 1981] [10] p. illus. (part col.)

The front and back cover of the pamphlet reproduce in color the panels from the Bayeux Tapestry illustrating the 1066 apparition of Halley's Comet.

Issued also in French as *La mission Giotto*.

895

European Space Agency. International Comet Mission: report on the Phase A study. [Paris?] 1979. 66 p. illus. (*Its* SCI(79)11)

NASA accession no. N80-22385.
References (12): p. 7.

Plans for the joint ESA/NASA Halley flyby/Tempel 2 rendezvous mission. Sections of the report treat present knowledge of comets, scientific objectives, mission analysis, system design, and management and time schedule.

896
European Space Agency. Report on studies for a comet mission to Halley and Tempel-2. Paris, 1979. 23, [17] p. illus. (*Its* SOL(79)3)

897
European Space Agency funds astronomy satellite study. Aviation week & space technology, v. 112, Mar. 17, 1980: 16–17. TL501.A8, v. 112

Includes information on plans being studied for a European spacecraft mission to Halley's Comet.

898
Europeans, Soviets plan Halley data exchange. Aviation week & space technology, v. 114, Apr. 27, 1981: 148. TL501.A8, v. 114

899
Europeans to probe Halley's Comet without U.S. help. Wall Street journal, v. 196, July 15, 1980: 31. N&CPR

The European Space Agency is designing its own mission to Halley's Comet since budget cuts have prevented NASA from participating in the previously planned joint mission.

900
Europe's voyage to Halley's Comet. Space journal, v. 1, summer 1982: 12. illus. DLC

901
Evans, David S. The astronomical work of Sir John Herschel at the Cape. *In* South African Public Library, *Cape Town.* Quarterly bulletin, v. 12, Dec. 1957: 44–58. Z965.S767, v. 12

"Halley's Comet": p. 53–54.

902
Evans, Joseph. A reader who saw Halley's Comet in 1835 and Donati's in 1858. Monthly evening sky map, v. 4, Aug. 1910: 4. QB1.M75, v. 4

Letter including recollections of seeing Halley's Comet when the writer was a 10-year-old living near Tarrytown, New York.

903
Evelino, Gaspar J. Especulacion astrologica, y physica de la natvraleza de los cometas, ** y ** jvizio del qve este Año de 1682. se vè en todo el Mundo. En Mexico, Por la Viuda de B. Calderon, en la calle de San Augustin, Año de 1682. 4 leaves. RPJCB

904

Evershed, John. Halley's Comet and its spectrum as observed at Kodaikánal. *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 605–610. plate. QB1.R7, v. 70

905

Evershed, John. Observations of Halley's Comet. [Madras, Printed by the Supt., Govt. Press, 1910] 199–207 p. (Kodaikanal, India. Observatory. Bulletin no. 20) QB4.K65, no. 20

Includes reports on photographs taken Apr. 18–May 30, 1910, the spectrum (also photographed, Apr. 18–May 16), the transit across the sun's disk, and observations of the tail before and after the day of transit. A short summary of the observations of Halley's Comet made here can be found on p. 9 of the 1910 *Annual Report* of the director, Kodaikanal and Madras Observatories (Madras, Printed by the Supt., Govt. Press, 1911. QB82.M1, 1910).

906

Evershed, John. Observations of the tail of Halley's Comet before and after the day of transit. *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 610–611. QB1.R7, v. 70

907

Evershed, John. The transit of Halley's Comet across the sun. *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 612–613. QB1.R7, v. 70

908

Evershed, Mary A. Dante and Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 24, Apr. 1914: 362–363. QB1.B75, v. 24

Letter to the editor expressing the belief that Dante, in the passage quoted by Paget Toynbee in the *Times* of Dec. 31, 1913, and discussed by Chambers in the Feb. 1914 issue of the *Journal*, was describing "a bright meteor or shower of meteors." The apparition recorded by Giovanni Villani, however, may well have been the 1301 appearance of Halley's Comet.

909

The Excommunicated comet—whence the myth? America, v. 2, Nov. 20, 1909: 139. BX801.A5, v. 2

Signed J. E. T.

See also the excerpts on this topic from Heward's "The Story of Halley's Comet" (item 1403) quoted in the issue of Oct, 2, 1909, p. 682; the brief note on the reappearance of the fable in the 1910 *World Almanac*, in the issue of Jan. 29, 1910, p. 426; and John C. Reville's article, "The Pope of the Comet," in the issues of Apr. 2 and 9, p. 662–663 and 691–693.

910

De Excommunicatie der komeet van 1456 door Paus Calixtus III. Vragen van den dag, 25. jaarg., feb. 1910: 184.

911
[The Expected comet] London magazine; or, Gentleman's monthly intelligencer, v. 28, May 1759: 275. AP3.L7, v. 28 Rare Bk. Coll.

Notes the appearance of the comet, visible on "many clear evenings till ten or eleven o'clock, to the west of the south, under the constellation of Hydra, and near that of Crater." Its positions during the first seven days of May are given.

912
Faccin, Francesco. Calisto III e la cometa di Halley. Rivista di fisica, matematica e scienze naturali, v. 21, genn. 1910: 3–11.

Includes bibliographic references.

913
Faccin, Francesco. La cometa di Halley. Rivista di fisica, matematica e scienze naturali, v. 21, apr./magg. 1910: 450–452, 456; v. 22, ott.: 370–372.

News notes. Those in the latter issue report three articles on the comet by Pio Emanuelli and discuss the largely negative results of observations made during the time when the earth was expected to pass through the comet's tail.

914
Facts about Halley's Comet. Journal of education (Boston), v. 71, May 12, 1910: 523. L11.J5, v. 71

915
Faivre, Abel. La comète. Le Figaro, 56. année, 11 mai 1910: 3. illus. N&CPR

Drawing shows a well-dressed elderly lady gazing through her lorgnette out the window into the night sky; gentleman in the room says, "Vous avez tort de vous intéresser . . . Elle n'est pas de notre monde!"

916
Falb, Rudolf. Der Comet Halley und seine Meteoriten. Astronomische Nachrichten, 72. Bd., Nr, 1727, 4. Dec. 1868: columns 361–364. QB1.A77, v. 72

Suggests that it should be possible to see Halley meteors crossing the solar disk on or about May 15, when the earth encounters the descending node of the orbit of Halley's Comet, and that a meteor shower should occur on or about May 2, when the earth comes nearest to the meteor stream. In support of these ideas the author quotes observations published in *Entretiens hebdomadaires pour les amis de l'astronomie* in 1848 and 1849. A French translation of Falb's article, "La comète de Halley et ses météorites," appears in *Les Mondes*, t. 20, 24 juin 1869, p. 293–296, with editorial comment on p. 283 (Q2.C8, v. 20).

917
Falb, Rudolf. Nochmals der Comet Halley und seine Meteoriten. Astronomische Nachrichten, 73. Bd., Nr. 1740, 16. Feb. 1869: columns 177–180. QB1.A77, v. 73

Responds to Weiss's objections to his earlier paper on the subject. See also Falb's note in Nr. 1752, 15. Apr. 1869, columns 381–382.

918
La Fameuse comete de 1682 a commencée à paroître et a eté observée à Paris dans l'observatoire royal par le Grand Cassini depuis le 25 aoust au matin jusqu'au 24 septembre au soir qu'elle a disparue. Paris, B. Thevenard [1759] engraving.

Most of the picture is reprinted in Stéphane Groueff and Jean-Pierre Cartier's *L'homme et le cosmos*, p. 147 (Paris, Larousse [1975] QB28.G76).

919
Faris, Robert L. Magnetic observations at Cheltenham, Maryland, May 15 to 20, 1910. Terrestrial magnetism and atmospheric electricity, v. 15, Sept. 1910: 163–165. illus. QC811.J6, v. 15

See also p. 168 of this issue, on which a table entitled "Principal Magnetic Storms Recorded at the Cheltenham Magnetic Observatory, April 1 to June 30, 1910," by Otto H. Tittmann and John E. Burbank, lists a storm beginning about 2 p.m. on May 18 and lasting until 9 p.m. May 19.

920
Farjeon, Eleanor. Halley's Comet. *In her* The starry floor. Drawings by Isobel & John Morton Sale. London, M. Joseph [1949] p. 50. illus. PR6011.A67S7 1949

Poem. The drawing appears on p. [51]

921
Farquhar, Robert W., *and* William H. Wooden. Cometary exploration in the shuttle era. Greenbelt, Md., National Aeronautics and Space Administration, Goddard Space Flight Center, 1978. 19 p. illus. (NASA TM 78033) Sci RR

NASA accession no. N78–15978.

References (12): p. 18–19.

A Halley fast flyby is among the missions described.

922
Farquhar, Robert W., *and* David W. Dunham. Earth-return trajectory options for the 1985–86 Halley opportunity. Journal of the astronautical sciences, v. 30, Oct./Dec. 1982: 307–328. illus. TL787.A6A3, v. 30

References (14): p. 328.

Presented at the AIAA 20th Aerospace Sciences Meeting, Jan. 11–14, 1982, Orlando, Florida.

Describes "A unique and useful family of ballistic trajectories to Halley's comet."

923
Farquhar, Robert W., *and* William H. Wooden. Halley's Comet 1985–86: a unique opportunity for space exploration. Greenbelt, Md., National Aeronautics and Space Administration, Goddard Space Flight Center, 1980. 11 p. illus. (NASA TM 80633) Sci RR

NASA accession no. N80–30343.

References (3): p. 11.

Proposes a coordinated program to explore Halley's Comet in 1985–86.

924

Farquhar, Robert W. Mission strategy for cometary exploration in the 1980's. Presented at IAU Colloquium no. 25, the study of comets, November 1, 1974. Greenbelt, Md., Goddard Space Flight Center [1974?] 25 p. illus.
Sci RR

NASA accession no. N75–14799.
References (14): p. 25.
"The final mission of the sequence calls for a simultaneous launch of two spacecraft toward Halley's Comet in 1985."
Also published in *The Study of Comets; the Proceedings of IAU Colloquium no. 25*, pt. 2, p. 1033–1057 (Washington, D.C., Scientific and Technical Information Office, National Aeronautics and Space Administration, 1976. NASA SP–393. QB721.S74).

925

Farquhar, Robert W., *and* William H. Wooden. Opportunities for ballistic missions to Halley's Comet. Greenbelt, Md., Goddard Space Flight Center, 1977. 23, [16] p. illus. (NASA TM X–71289) Sci RR
NASA accession no. N77–21137.
References (10): p. 23.

926

Farquhar, Robert W., *and* William H. Wooden. Opportunities for ballistic missions to Halley's Comet. Washington, D.C., National Aeronautics and Space Administration, 1977. 21, [14] p. illus. (NASA TN D–8453)
Sci RR

NASA accession no. N77–29184.
References (8): p. 21.
Similar to NASA TM X–71289.

927

Farquhar, Robert W., D. P. Muhonen, F. I. Mann, William H. Wooden, *and* Donald K. Yeomans. Shuttle-launched multi-comet mission 1985. *In* Astrodynamics 1975. A selection of technical papers presented at the 1975 Astrodynamics Conference sponsored by the American Astronautical Society and the American Institute of Aeronautics and Astronautics, held at Nassau, Bahamas, July 28–30, 1975. San Diego, CA, Univelt [1976] (Advances in the astronautical sciences, v. 33) p. 195–217. illus.
TL787.A6A2, v. 33

"AAS 75–085."
References (7): p. 217.
Of two proposed cometary spacecraft, one would be targeted for a preperihelion encounter with Halley's Comet in December 1985.

928

Fas, Jan A. Verhandeling over twee comeeten uit de berekeningen van den Heer Halley, waar van de een door zijne terugkomst, aan de voorzegging voldaan heeft, en de ander verwagt word. Te Leyden, Bij F. de Does, MDCCLXXXVII. 56 p. fold. plate.
Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 117.

928a
Faterson, I. Przyszły powrót komety Halleya. Wszechświat, t. 27, 28 listop. 1908: 705–708.

929
Father Cortie, S.J., and Halley's Comet. Tablet, v. 115, Apr. 23, 1910: 663.
AP4.T17, v. 115
Report of a lecture given by Father A. L. Cortie at the Temperance Hall.

930
Favaro, Antonio. La cometa di Halley nel carteggio galileiano. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 4, luglio 1910: 304–307. QB1.S57, v. 4
Bibliographic footnotes.
Presents extracts from letters sent to Galileo by Raffaello Gualterotti and Benedetto Castelli, describing observations made in Oct. 1607.

931
Fay, Stanley J. "Quantum mutatus ab illo . . ." Punch, v. 138, June 1, 1910: 461. AP101.P8, v. 138
A poem on the disappointing faintness of the comet's appearance.

932
Faye, Hervé A. E. A. Influence des comètes sur l'opinion. Revue contemporaine, 2. sér., t. 5, 31 oct. 1858: 780–785. Micro 04863
Part of an article on Donati's Comet. Somewhat less than half this section is devoted to the 1456 appearance of Halley's Comet, the story of the papal bull anathematizing the comet, and the author's fruitless search for this document.

933
Fayet, Gaston. La comète de Halley. Revue scientifique, 48. année, 12 fév. 1910: 207–209. illus. Q2.R53, v. 48
Includes an ephemeris for Jan. 5–May 30.

934
Fayet, Gaston. L'observation de la comète de Halley à Ténériffe. Revue scientifique, 48. année, 20 août 1910: 242–243. Q2.R53, v. 48
On Mascart's work.

935
Fayet, Gaston. Quand pourra-t-on voir la comète de Halley? Revue scientifique, 48. année, 30 avril 1910: 559–562. illus. Q2.R53, v. 48

936
The Fear of the comet. Outlook (London), v. 25, May 21, 1910: 741–742.
AP4.O8, v. 25
Signed L. A. H. Followed by a paragraph noting that the comet "has now reached its last stage before disappearing from human eyes on its journey through planetary space."

937
The Fear of the unknown. New York American, May 1, 1910, editorial section: 1. illus. N&CPR

"A little study of the known history of the great comet which is now rushing toward the earth at an incredible speed proves satisfactorily that human beings ARE growing wiser and better."

938
Fechtig, Hugo. Dust hazard of the cometary probe. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP-153) p. 63-65. illus.

NASA accession no. N80-22208.

References (2): p. 63.

938a
Fechtig, Hugo. Kometen—Boten aus der Frühzeit des Universums. Sterne und Weltraum, 22. Jahrg., Aug./Sept. 1983: 394-397. illus. (part col.) QB1.S854, v. 22

Revision of a talk broadcast over the Süddeutscher Rundfunk on Jan. 16, 1983. The emphasis is on Halley's Comet and the space missions being prepared to study it.

939
Fechtig, Hugo. Kometen und ihre Erforschung durch Raumsonden. Naturwissenschaftliche Rundschau, 35. Jahrg., Jan. 1982: 1-5. illus. Q3.N823, v. 35

References (8): p. 5.

Half the article is devoted to Halley's Comet and the Giotto mission.

939a
Fechtig, Hugo. Neuartige Raumsonden-Missionen zu den Kometen in den achtziger Jahren. Sterne und Weltraum, 17. Jahrg., Apr. 1978: 121-125. illus. QB1.S854, v. 17

References (7): p. 125.

Many of the proposed missions involve Halley's Comet.

940
Fechtig, Hugo. Size distribution, structure, and chemical composition of cometary dust particles. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27-28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP-169) p. 47-52. illus.

NASA accession no. N82-14114.

References (43): p. 52.

Includes a section on expectations for dust experiments in the coma of Halley's Comet.

941
Feijth, H. Komeet Halley in aantocht. Zenit, 8. jaarg., jan. 1981: 4-10. illus. DN-Ob

References (11): p. 10.

A European Space Agency news release, Inf. no. 20 of July 10, 1980, appears in a box on p. 8 under the title "Europese ruimtesonde gaat Komeet van Halley onderzoeken."

942

Feiks, Eugen. Salonluftschiff der Meggendorfer Blätter. Meggendorfer-Blätter, 81. Bd., 3. Mai 1910: 88. col. illus.

Cartoon. A beautiful dirigible, built for the magazine's subscribers (and for any who quickly decide to subscribe), will be used on the day the world ends to carry its passengers to some cheerful planet.

943

Feldman, Paul D. Final report: a study of the feasibility of ultraviolet spectrometry for cometary missions. Baltimore, Md., Johns Hopkins University, Dept. of Physics, 1979. 66 p. illus. Sci RR

NASA accession no. N79-22987.

References (38): p. 65-66.

Concludes that possible flybys of P/Halley or P/Encke close to perihelion would be preferable to the planned Halley/Tempel 2 mission for obtaining data "within the existing capabilities of ultraviolet spectroscopic instrumentation."

944

Feldman, Paul D. Ultraviolet spectroscopy and the composition of cometary ice. Science, v. 219, Jan. 28, 1983: 347-354. illus. Q1.S35, v. 219

References (56): p. 354.

"Our current knowledge of the composition of the cometary nucleus is largely inferred from observations of the gas and dust comae that are produced by sublimation of cometary ice when a comet is near the sun. During the past decade, far-ultraviolet spectroscopy from above the terrestrial atmosphere has shed new light on the physics and chemistry of the gaseous component of the coma. The advent of interplanetary missions to Halley's comet in 1986 and the development of a new generation of earth-orbiting observatories promise further insights into the nature of these frozen remnants of the primordial solar system."

945

Felenbok, P., J. P. Picat, A. Chevillot, J. Guérin, Michel Combes, Eric Gérard, J. Lecacheux, *and* G. Lelièvre. Deep sounding with electronographic camera at the prime focus of the CFHT: upper limit to the visual brightness of comet P/Halley during 1981/1982 opposition. Astronomy and astrophysics, v. 113, Sept. (I) 1982: L1-L2. QB1.A83, v. 113

Letter to the editor.

References (9): p. L2.

"The unsuccessful search for P/Halley during the 1981/82 opposition leads to significant constraints on the albedo and radius of the comet nucleus."

946

Fernández, Julio A. The role of collisions with interplanetary particles in the physical evolution of comets. Moon and the planets, v. 25, Dec. 1981: 507-519. illus. QB581.M65, v. 25

References (36): p. 518–519.

"It is found that collisions may have a non-negligible effect on the physical evolution of comets. In this connection, it is shown that under certain conditions collisional lifetimes may be shorter than dynamical or vaporization lifetimes. In particular, collisional lifetimes are on average shorter for comets in retrograde orbits than those for direct ones . . . The systematic observation of periodic comets when they pass through the asteroid belt could give valuable information about the spatial density of decimeter and meter-sized bodies. In particular, collisional effects for comet Halley, for which a continuous surveillance is planned, are evaluated."

947

Ferrari d'Occhieppo, Konradin. Weitere Dokumente zu Peuerbachs Gutachten über den Kometen von 1456 nebst Bemerkungen über den Chronikbericht zum Sommerkometen 1457. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse*. Sitzungsberichte, 169. Bd., Abt. 2, 5./10. Heft, 1961: 149–169. illus. AS142.V311, v. 169, Abt. 2

References (8): p. 169.

—— ——— *In* Vienna. Universität. *Sternwarte*. Mitteilungen. Bd. 11. Wien, 1960–62. p. 69–89. DN-Ob

References (8): p. 89.

Includes text of an anonymous German manuscript and extracts from a Latin document by Peurbach and the *Chronicon Austriacum* by Thomas Ebendorfer, all relating to the 1456 appearance of Halley's Comet.

948

Ferrerio, Giovanni. De vera cometae significatione, contra astrologorvm omnivm vanitatem libellus. Parisiis, Ex officina M. Vascosani, M. D. XL. 14 leaves. CtY; MiU

Concerns the comet of 1531.

949

Ferrill, Harriet. Halsted Street sees that comet and feels a little apprehensive. Chicago Sunday tribune, v. 69, May 15, 1910, pt. 9: 6. illus. N&CPR

Uneasiness in Chicago's foreign district.

950

Ferrin, Ignacio. On the brightness of Halley's Comet. Astronomy and astrophysics, v. 107, Mar. (I) 1982: L7–L9. illus. QB1.A83, v. 107

Letter to the editor.

References (14): p. L9.

From an examination of data recorded at the comet's 1910 apparition, the author concludes that its fluctuations in brightness derive from an uneven surface distribution of volatiles or albedo or both, and that it broke up into several pieces on May 30, 1910, and may do so again in 1986.

951

Fershter, Frank. [Halley's Comet] *In* Metz, Jerred, *comp*. Drinking the dipper dry: nine plain-spoken lives. Saint Louis, K. M. Gentile Pub., Singing Wind Press, 1980. p. 132–133.

Reminiscences of the comet in 1910, when Fershter, a lad of 14, lived in a Ukrainian town 50 miles from Odessa.

952

Festou, Michel. La comète de Halley revient. Ciel et espace, no 191, jan./fév. 1983: 10–11. illus.

953

Festou, Michel. La RCP "Comète de Halley." L'Astronomie, v. 95, nov. 1981: 474. DN-Ob

Announces the establishment of "une structure administrative" to prepare for and coordinate the efforts of French astronomers to observe the comet during its 1985–86 return. "RCP" stands for "Recherche coopérative sur programme."

954

A Few observations on comets. Axminster, Printed for the author by E. Wills, 1835. 18, [3] p. plates.

Held by the British Library under shelfmark 8562. a. 40. (1.).

Includes historical data on Halley's Comet and a diagram of part of a northern planisphere showing "the probable course of Halley's Comet, as calculated by Messrs Damoiseau and Pontecoulant, from Aug. 1835 to Febr. 1836."

955

Field, Charles H. B. The orbit of Halley's Comet. Copley, Ohio, 1910. broadside (1 p.) 46 × 30.5 cm. Rare Bk. Coll.

Broadside portfolio 138, no. 23a.

Provides instructions for school children on how to construct a model of the comet's orbit.

956

Filippis, Antonio de. La cometa di Halley. Scena illustrata, anno 46, 15 magg. 1910: 27. illus. AP37.S25, v. 46

957

O Fim do mundo e os cometas. Illustracão portugueza, 7 de fev. de 1910: 169–175. illus., port. AP65.I6, 1910

The portrait shows Flammarion in his study. On the cover of the issue is reproduced, in color, Rudaux's diagram showing the path of the earth, May 1–30, and that of Halley's Comet, Apr. 20–May 30.

958

Fin du monde le 19 mai 1910. *In* Philippen, Jos, Edouard de Keyser, *and* Jacqueline Marinus. Histoire et charme de la carte postale illustree. Diest, Europa [1977] p. 100. NC1872.P414

A comic postcard depicts people being sent in various ways to the moon to escape the anticipated destruction of the earth by Halley's Comet.

959

La Fin du monde n'est pas venue. Le Rire, 11 juin 1910: [12] illus. AP103.R4, 1910

Cartoon from *Pasquino* (Turin). A man with the head of a terrestrial globe frowns at his watch and decides that he has been stood up.

960

Fincel, Hiob. Wunderzeichen. Warhafftige beschreibung und gründlich verzeichnus schrecklicher Wunderzeichen und Geschichten, die von dem Jar an M. DXVII. bis auff itziges Jar M. D. LVI. geschehen und ergangen sind, noch der Jarzal. Auffs new ubersehen und gebessert. Jhena, Gedruckt durch C. Rödinger, M. D. LVI. [437] p.

Held by the British Library under shelfmark 718. c. 5.

Includes a paragraph on the comet of 1531 (leaf F-8, p. [91]). The comet was first seen Aug. 6; it traveled through four signs of the zodiac—Cancer, Leo, Virgo, and Libra—and was followed a month later by the outbreak of warfare in Switzerland.

961

Finlay, William H., *and* William A. D. Rudge. The tail of Halley's Comet on May 18–19. Nature, v. 83, June 23, 1910: 487. Q1.N2, v. 83

Letter to the editor describing observations made at Bloemfontein.

962

The First photograph of Halley's Comet. Scientific American, v. 101, Oct. 16, 1909: 276. illus. T1.S5, v. 101

Reproduces photographs taken Sept. 24 and 26 at the Yerkes Observatory. A diagram shows the comet's path among the stars from Sept 11, 1909, to Jan. 3, 1910.

963

First spaceflight to the comets threatened. New scientist, v. 84, Dec. 6, 1979: 760. illus. Q1.N52, v. 84

On the proposed Halley/Tempel 2 mission, menaced by the opposition of the Office of Management and Budget to NASA's development of solar electric propulsion.

964

Fischer, Alb. Die Erscheinung des Halley'schen Kometen im Jahre 1835. Nach den besten astronomischen Schriften mit einer Einleitung in das Weltall zu Jedermanns Belehrung hrsg. von A. Fischer. Stuttgart, F. Brodhag'sche Buchhandlung, 1835. 23 p. NNC

965

Fischer, Johann K. Kometen. *In his* Geschichte der Physik seit der Wiederherstellung der Künste und Wissenschaften bis auf die neuesten Zeiten. 4. Bd. Göttingen, J. F. Röwer, 1803. (Geschichte der Künste und Wissenschaften seit der Wiederherstellung derselben bis an das Ende des achtzehnten Jahrhunderts. 8. Abth. Geschichte der Naturwissenschaften. I. Geschichte der Naturlehre) p. 317–324. QC7.F52, v. 4

Half the section is devoted to Halley's prediction and observations of the comet in 1759.

966

Fischer, Joseph W. Neue Erfahrungen und Ansichten über die Cometen, deren Licht und Schweife überhaupt; dann insbesondere über den unserer

Erde im Herbste 1835 wieder nahe kommenden merkwürdigen Appian'schen Cometen, und über dessen Einfluss auf die Witterung. Wien, Druck und Verlag von J. P. Sollinger, 1834. 66 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR.C1. 399.

In the section entitled "Ueber den im Herbste 1835 der Erde wieder nahe kommenden Halley'schen oder eigentlich Appian'schen Cometen, und über dessen Einfluss auf die Witterung" (p. [43]–66), 11 earlier appearances are described. Those preceding 1456 (1380, 1304/5, 1230, 1155, 1080, and 1005) are no longer accepted as returns of Halley's Comet.

967

Fischer-Petersen, J. Ephemeride des Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4412/4413, 19. Mai 1910: columns 347–348. QB1.A77, v. 184

For the period May 17–25.

968

Fischer-Petersen, J. Tägliche Ephemeride des Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4411, 12. Mai 1910: columns 317–318. QB1.A77, v. 184

For the period May 2–10. First published in a supplement to Nr. 4407 (29. Apr.).

969

Fisher, Arthur. Close encounter with a comet. Popular science, v. 216, Apr. 1980: 15–16. illus. AP2.P8, v. 216

Short article about the NASA/ESA spacecraft mission.

970

Fisher, Harry C. Jeff was taking a peek at Halley's Comet when hard luck overtook him—by "Bud" Fisher. New York American, May 16, 1910: 11. illus. N&CPR

Comic strip.

971

Fisher, T. Comets not dangerous. Gentleman's magazine, v. 28, Feb. 1758: 66–68. AP4.G3, v. 28 Rare Bk. Coll.

Letter seeking to allay fears of the expected comet.

972

Flammarion, Camille. Arrivée de la comète de Halley. *In* Société astronomique de France. Bulletin, 23. année, oct. 1909: 441–443. port. QB1.S6, v. 23

The subject of the portrait is Max Wolf.

973

Flammarion, Camille. [La comète de Halley] *In* Astronomie populaire; description générale du ciel. Paris, C. Marpon et E. Flammarion, 1880. p. 608–610. illus. QB44.F58

The history of Halley's prediction. Events accompanying some of the comet's earlier returns are described on p. 598–599.

974
Flammarion, Camille. [La comète de Halley] New York herald (European ed.), Dec. 19, 1909: 6; Jan. 14, 1910: 6; Jan. 17: 6; Mar. 7: 5; Mar. 16: 6; Apr. 5: 5; Apr. 13: 6; Apr. 21: 6; [illegible], May 12: 6; May 15: 5; May 18: 5; May 20: 5; May 29: 6; June 2: 7; June 15: 6. illus. N&CPR

Contents: Sans la comète de Halley, point d'angélus de midi.—La comète de Halley active sa course folle vers nous.—Les divers problèmes posés par la comète de Halley.—Un portrait du comète vieux de huit siècles.—Propos de M. W. H. Pickering sur la comète de Halley.—La comète de Halley et les feux magnétiques.—Comme une comète, la terre posséderait son appendice.—De quoi sera fait demain pour la comète de Halley?—Les queues des comètes ne sont-elles qu'illusion?—La comète n'est plus qu'à soixante millions de kilomètres de la terre.—La comète de Halley et le mauvais temps.—Encore une fois, l'humanité peut dormir en paix.—La terre a-t-elle travers, hier, la queue de la comète?—Au passage de la comète, on n'a rien vu sur la terre.—Bien que peu l'aient vue, la comète de Halley a passé.—La terre a rencontre la queue de la comète.

975
Flammarion, Camille. La comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, juin 1910: 282–283. illus. QB1.S6, v. 24

Discusses the observations made at Juvisy despite poor weather during the second half of May. Sketches show the head of the comet as it appeared on the 23d at 8:40 and 9:40 p.m.

976
Flammarion, Camille. La comète de Halley au temps de la conquête de l'Angleterre. *In* Société astronomique de France. Bulletin, 24. année, avril 1910: 193–195. illus. QB1.S6, v. 24

977
Flammarion, Camille. La comète de Halley dans l'histoire. *In* Société astronomique de France. Bulletin, 24. année, mai 1910: 221–230. illus. QB1.S6, v. 24

Most of the illustrations are from Lubieniecki's *Theatrum Cometicum* (see item 1899).

978
Flammarion, Camille. La comète de Halley et le magnétisme planétaire. *In* Société astronomique de France. Bulletin, 24. année, mai 1910: 230–231. illus. QB1.S6, v. 24

Comments on Birkeland's plans.

979
Flammarion, Camille. L'événement astronomique le plus important de l'année 1910: la comète de Halley. *In* Annuaire astronomique et météorologique. 47. année; 1911. Paris, Librairie E. Flammarion [1910] p. [219]–238.

The frontispiece of the volume reproduces a picture of the comet made May 28 at the Observatoire Flammarion de Tulancingo, Mexico.

The article includes, on p. 230–231, a list of observers and observatories whose reports on Halley's Comet were utilized by Flammarion.

980
Flammarion, Camille. Halley's Comet and the fate of humanity. Busy man's magazine, v. 19, Feb. 1910: 82–83. AP5.M2, v. 19

Excerpted from a source identified only as the *Herald Magazine Section.* "The poisoning of humanity by deleterious gases is improbable."

981
Flammarion, Camille. Histoire d'une comète. *In his* Recits de l'infini. Paris, Didier, 1873. p. [237]–342. AC25.F557 1873

Developments on the earth are observed by the Comet of 1811 during 200 revolutions (its period being reckoned at 3,065 years). Finding things greatly changed in 1811 from what they had been in 1254 B.C., the comet obtains an account of happenings during the interval from Halley's Comet, which it meets "dans les solitudes trans-uraniennes."

982
Flammarion, Camille. Histoire réelle de la comète de Halley. *In* Société astronomique de France. Bulletin, 25. année, jan. 1911: 3–12. illus. QB1.S6, v. 25

A somewhat abridged version, translated into German, appears as "Der Vorübergang des Halleyschen Kometen am 19. Mai 1910" in *Kosmos* (Stuttgart), 8. Jahrg., Juni 1911, p. 201–205 (Q3.K8, v. 8).

983
Flammarion, Camille. Les incendies du ciel. Je sais tout, 6. année, avril 1910: 309–316. illus. AP20.J4, v. 6

Chiefly about Halley's Comet. One of the illustrations, by Henri Lanos, shows the comet in the sky as the Norman forces under Duke William arrive in England.

984
Flammarion, Camille. Le journal de la comète. L'Illustration, t. 135, 23 avril, 7–14, 28 mai 1910: 372–373, 418–419, 440–442, 476–478. illus. AP20.I3, v. 135

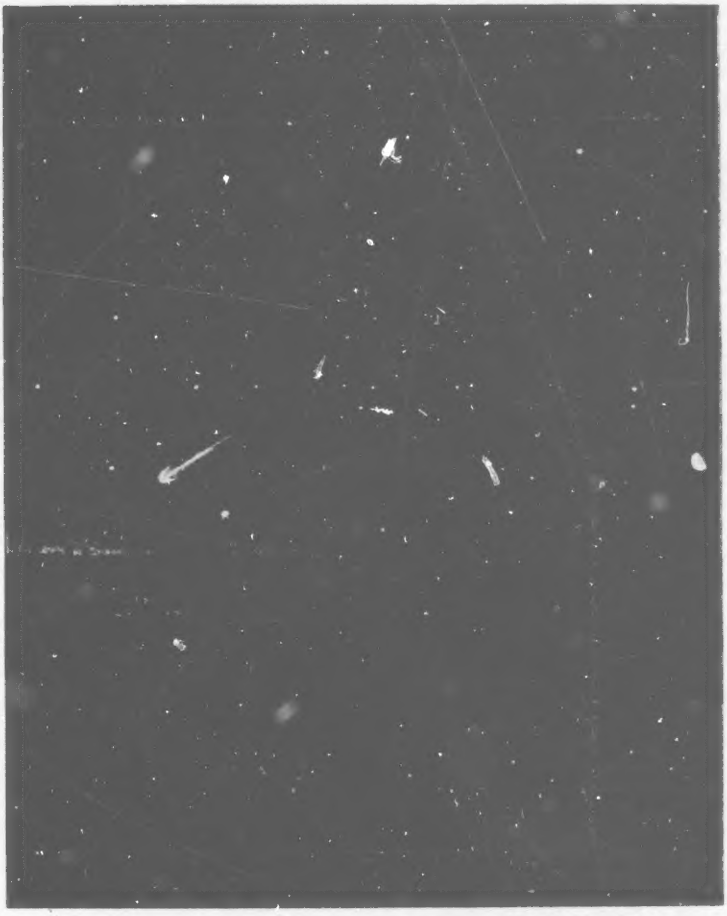
The third and fourth installments are subtitled, respectively, "Ce qui se passera le 18 mai" and "La 'désillusion' du 19 mai."

985
Flammarion, Camille. La nuit de la comète. L'Illustration, t. 135, 21 mai 1910: 474. AP20.I3, v. 135

Short letter describing his observations at Juvisy during the night of May 18/19.

986
Flammarion, Camille. Le passage de la comète de Halley dans le voisinage de la terre. *In* Société astronomique de France. Bulletin, 24. année, juil. 1910: 297–325. illus. QB1.S6, v. 24

Includes excerpts from many letters and published reports recording observations of the comet. See also the note, "La Rencontre de la comète de Halley avec la terre," in the sept. 1910 issue, p. 405, 407.



Fernand Baldet, although trained as a jeweler and goldsmith, had a long and successful career in astronomy, most of it spent at the Meudon observatory. Best known for his studies on comets, he was also skilled in photography, spectroscopy, and astrometry. His drawing of what the eastern sky should look like before dawn on May 1 also shows a pleasing view of the Ile de la Cité and several bridges across the Seine, the nearest being the Pont des Arts. It was published with the first installment of Flammarion's series, "Le Journal de la comète," in *L'Illustration*, t. 135, 23 avril 1910, p. 373. Unfortunately, the prospect it held out was not fulfilled; the first few nights in May were cloudy in Paris, which experienced an unusually wet and chilly spring that year.

987

Flammarion, Camille. Une réhabilitation: le passage de la comète de Halley entre la terre et le soleil. L'Illustration, t. 136, 24 déc. 1910: 493–494. illus.
AP20.I3, v. 136

988

Flammarion, Camille. La rencontre de la comète. *In* Société astronomique de France. Bulletin, 24. année, fév. 1910: 57–61. illus.
QB1.S6, v. 24

A list of 28 "Anciennes apparitions de la comète de Halley," which follows this article on p. 61–62, is reprinted in *Cosmos*, t. 62, 5 mars 1910, p. 253–254.

989

Flammarion, Camille. La rencontre de la comète avec la terre. *In* Société astronomique de France. Bulletin, 24. année, juin 1910: 249–270. illus., plate.
QB1.S6, v. 24

The plate reproduces a photograph of Comet Morehouse.

990

Flammarion, Camille. La rencontre de la comète de Halley avec la terre, le 18 mai. L'Illustration, t. 135, 22 jan. 1910: 60. illus.
AP20.I3, v. 135

Brief text accompanies an illustration by Lucien Rudaux of the paths of the earth and the comet during the first two weeks of May. Rudaux's drawing, under the heading "Comets Crowding the Celestial Heavens," is reproduced in the *Sphere*, v. 40, Jan. 29, 1910, p. 113 (AP4.S73, v. 40).

991

Flammarion, Camille. Rencontre probable de la comète de Halley avec la terre. *In* Société astronomique de France. Bulletin, 24. année, jan. 1910: 27–31. illus.
QB1.S6, v. 24

992

Flammarion, Camille. Le retour de la comète de Halley. *In* Annuaire astronomique et météorologique. 45. année; 1909. Paris, Librairie E. Flammarion [1908] p. 221–223. illus.
QB9.A6, v. 45

The diagram shows positions of the comet and Jupiter, Mars, the earth, and Venus for varying portions of the period 1908–10.

See also p. 295 of the *Annuaire* for 1910 (not in LC) which contains a short note and a diagram of the orbits of the earth and the comet during the time it is nearest the sun.

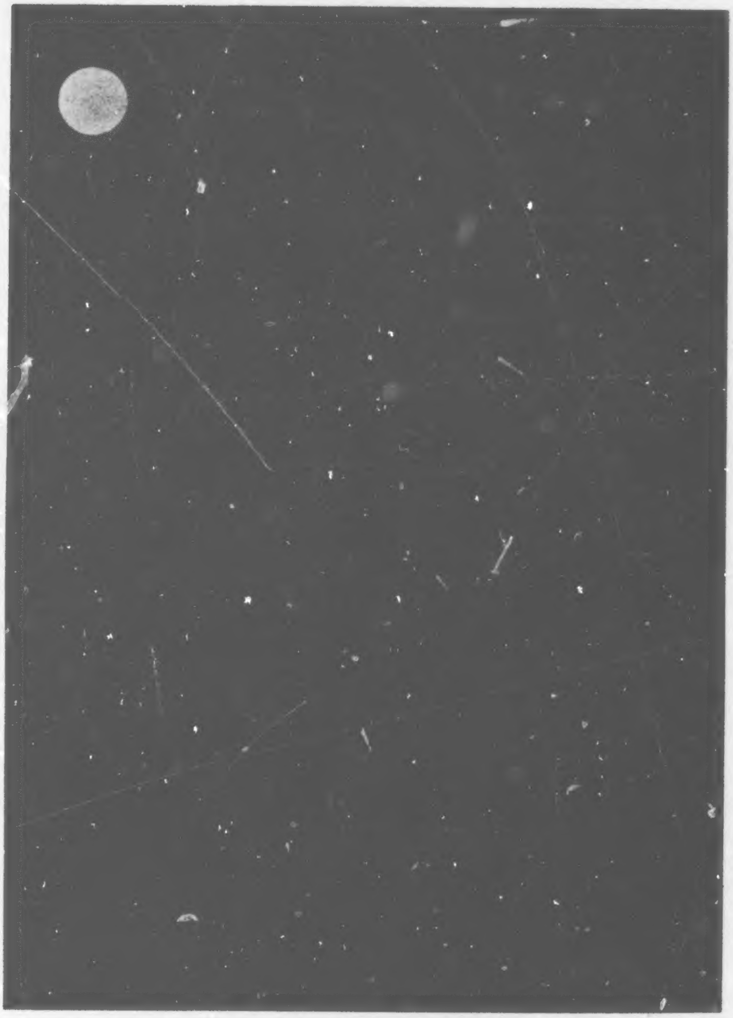
993

Flamsteed, John. Observationes cometae anni MDCLXXXII. *In his* Historiae coelestis britannicae volumen primum. Complectens stellarum fixarum nec non planetarum omnium observationes ... in Observatorio Regio Grenovicensi continua serie ab anno 1675, ad annum 1689. Londini, Typis H. Meere, M.DCC.XXV. p. 108–110.
QB4.F6, v. 1 Rare Bk. Coll.

Observations made Aug. 15–Sept. 10, 1682.

994

Flat mirror working—Halley's Comet. English mechanic and world of science, v. 91, July 22, 1910: 568.
T1.E5, v. 91



First published with a note by Camille Flammarion in *L'Illustration*, t. 135, 22 jan. 1910, p. 60, this diagram shows the encounter of the earth and the comet's tail predicted to occur on the night of May 18/19. The clarity of the presentation resulted in its reproduction in many other periodicals all over Europe. The artist, Lucien Rudaux, was an amateur astronomer whose enthusiasm had been kindled at an early age by Flammarion. His desire to explore the wonders of the heavens led him to build his own small observatory at Donville (Manche). He wrote and illustrated several books and many articles popularizing astronomy and was a contributor to the weekly *La Nature* for more than 40 years.

Letter to the editor signed "Himalayan exile" that includes a report of observations made May 19 and 25 at Simla, where the comet "was a wonderful spectacle."

995

Fleurigny, Henry de. La ballade de la comète. Le Figaro, supplément littéraire, nouv. sér., 6. année, 21 mai 1910: 1. N&CPR

996

Flint, Albert L. The passage of Halley's Comet, May 18. Popular astronomy, v. 18, June/July 1910: 370–371. QB1.P8, v. 18

Observations made at the Washburn Observatory, Madison, Wis.

997

Flock, Erasmus. Von dem jüngsten vnnd achten Cometen, deren, so von dem Jar M.D.XXXI an, biss auff das yetzig lauffend M.D.LVIII. Jar, erschinen sein, im Augstmonat gesehen. Nürnberg [V. Neuber] M.D.LVIII. 16 leaves.

Ascribed to the Stadtbibliothek in Aachen by Arthur Richel in his bibliographic essay, "Astrologische Volksschriften der Aachener Stadtbibliothek," in *Zeitschrift* des Aachener Geschichtsvereins, 19. Bd., 1897 (DD491.R4A2, v. 19).

Among the eight comets discussed is the 1531 appearance of Halley's Comet.

998

Flock, Warren L. Telecommunications in cometary environments. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. [42] p. illus. (JPL publication 81–84) Sci RR

NASA accession no. N82–11340.

References (40): p. [39]–[42].

"The emphasis of this report is directed specifically to the Halley Intercept Mission (HIM), but the intention is that it be applicable to telecommunications in cometary environments in general as well."

999

Floessel, Ernst M. Der sächsische Bauern-Astronom Johann Palitzsch. Die Umschau, 14. Jahrg., 22. Jan. 1910: 76–77. port.

The portrait is one of two held by the Mathematisch-physikalischer Salon at Dresden.

An English translation by W. Alfred Parr, entitled "J. G. Palitzsch," appears in the *Journal* of the British Astronomical Association, v. 20, Feb. 1910, p. 268–269 (QB1.B75, v. 20).

1000

Fockens, Gerardus R. De Halleysche Komeet. *In* Nederlandsch instituut van wetenschappen, letterkunde en schoone kunsten, *Amsterdam. 1. klasse.* Nieuwe verhandelingen, 7. deel, 2. stuk, 1837: 129–141. AS244.A42, v. 7

Observations made at Utrecht during the period Sept. 20–Nov. 24, 1835.

1001
Foley, John D. Halley's Comet. Georgetown College journal, v. 38, Oct. 1909: 14–15. LH1.G5J7, v. 38

Reports Wolf's discovery and Burnham's subsequent sighting, and gives some history of the comet's earlier appearances.

1002
Fonvielle, Wilfrid de. L'Observatoire Janssen et la grande comète de Halley. Cosmos, t. 61, 16 oct. 1909: 440–443. illus.

In calling for the maintenance of the observatory, situated on Mont Blanc, the author notes its suitability for observing the comet.

1003
Fonvielle, Wilfrid de. La théorie de Fontenelle à propos de la comète de Halley. Cosmos, t. 62, 23 avril 1910: 464–465.

Fontenelle considered comets' tails "comme produite par la concentration de la lumière du Soleil et, par conséquent, comme une pure illusion."

1004
Fonvielle, Wilfrid de. Zum Besuch des Kometen. Wiener Luftschiffer-Zeitung, 9. Jahrg., 1. Feb. 1910: 37–38. TL503.W5, v. 9

1005
Fonvielle, Wilfrid de. Zur Kometenbeobachtungen. Wiener Luftschiffer-Zeitung, 9. Jahrg., 1. Apr. 1910: 101–102. TL503.W5, v. 9

1006
Forissier, Béatrix. 1910: panique pour la fin du monde. *In her* 25 ans d'actualités à travers la carte postale, 1889–1914. [Paris] Les Éditions de l'amateur [1976] p. 118. illus. NC1875.F8F67

Reproduces a comic postcard entitled "Les derniers instants avant la fin du monde." People are hurrying to board the airship *Clément-Bayard II* en route to the moon; the comet is visible in the sky, and at left a public sale of dirigibles is proceeding.

Another postcard, with a photograph of the first Clément-Bayard airship, built in 1908, is shown on the same page. A second Clément-Bayard dirigible was actually built and sold to the British government in 1910. It was the first airship to cross the English Channel, but it arrived in Britain with its envelope in poor condition and was never flown again.

1007
Forme de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 2, 15. fév. 1836: 160. Q46.A14, v. 2

Describes an engraving sent by Cooper from Ireland, showing the comet as it appeared to him on Oct. 22 and 24, and quotes a sentence from his report of his observations.

1008
Formisano, V. Plasma physics problems for the cometary probe. *In* Workshop on Cometary Missions, *Bamberg, 1979*. Cometary missions; proceedings. [Edited by] W. I. Axford, H. Fechtig, J. Rahe. Bamberg,

1979. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 132) p. 47–62. illus.

References (18): p. 58–59.

1009

Formisano, V., A. A. Galeev, *and* Roal'd Z. Sagdeev. The role of the critical ionization velocity phenomena in the production of inner coma cometary plasma. Planetary and space science, v. 30, May 1982: 491–497. illus.

QC801.P5, v. 30

References (22): p. 495.

"The critical velocity triggering anomalous ionization of the neutral gas by plasma flow is calculated for the model based on the lower hybride [sic] instability. It depends strongly on the plasma and gas parameters, defining the instability development of the ionized atoms beam in the counterstreaming plasma.

"In particular, the possible role of the critical ionization mechanism for Halley's comet is examined. The fulfilment of both Townsend's condition for the self[s]ustained beam plasma discharge and Alfven's condition for the critical velocity mechanism indicates that this mechanism may operate only within 10^4 km from the cometary nucleus and give an ion production rate close to that observed for Kohoutek's comet."

1010

Forschungen nach dem Halleyschen Kometen. Sirius, 42. Bd., Mai 1909: 113.

DN-Ob

Reports negative results up to Feb. 1909 of photographic searches made at Heidelberg, Greenwich, and the Yerkes Observatory.

1011

Forsius, Sigfrid A. Een berättelse, och eenfallight judicium, om then cometen som nw j thetta åår MDCVII. j septembri och octobri månader, j 34. daghar widh pasz syntes, och ännw til är. Stockholm, A. Olufsson [1607] [22] p.

Isak Collijn, in his *Sveriges bibliografi, 1600-talet* (Uppsala, Svenska litteratursällskapet [1942]), ascribes copies to Stadsbiblioteket, Göteborg; Kungliga Biblioteket, Stockholm; and Universitetsbiblioteket, Uppsala, among others.

1012

Forster, Thomas I. M. Catalogue of pestilence since the Christian era. *In his* Illustrations of the atmospherical origin of epidemic diseases. 2d ed. Chelmsford, Printed by Meggy & Chalk, 1829. p. 139–180.

DNLM; ICJ; IU; NN; OC; PPAN; PPAmP; PPCP

Argues that "comets as they approach are followed by volcanic eruptions, earthquakes, and fiery meteors, unusual storms, and other atmospheric commotions, and that it is by the secondary effects produced by the atmosphere on the health, that diseases are produced." The table records appearances of Halley's Comet (not so identified) and notes on the plagues, epidemics, extremes of weather, and earthquakes that followed in 218, 760, 1222, 1301, 1456, 1531, 1607, 1682, and 1759.

In response to criticisms of this work by Arago, Forster published *Observations sur l'influence des comètes sur les phénomènes de l'atmosphère* (Aix-La-Chapelle, De l'impr. de J.-J. Beaufort, 1836. 80 p.

QC865.F73). This includes a "Catalogue des comètes depuis l'ère chrétienne, comparées avec les épidémies etc. et accompagnées de remarques" (p. 55–68) which makes frequent mention of Halley's Comet, although the dates preceding 1456 are different from those now accepted. There is also a "Catalogue de quelques grandes comètes avant l'ère chrétienne extrait du Catalogue de Lubienenski" (p. 69–71) and a section entitled "La comète de Halley; les changements observés dans sa forme sont-ils réels ou phénomènes produits par des vapeurs interposées?" (p. 52–54) based on observations made in 1835 by Forster himself and some colleagues.

1013

Forsyth, Andrew R. An appreciation of Halley. Observatory, v. 28, Nov. 1905: 405–407. QB1.O2, v. 28

Extract from an address given at the meeting of the British Association in South Africa in 1905, marking the 200th anniversary of the publication of Halley's prediction of the return of the comet of 1682. This part of the address deals chiefly with that prediction and notes the importance of its fulfillment in establishing Newtonian theory.

The full text of the address is available in *Science*, new ser., v. 22, Aug. 25, 1905, p. 234–247 (Q1.S35, n.s., v. 22), and in the *Report* of the 75th meeting of the British Association for the Advancement of Science, South Africa, August and September 1905, p. [307]–318 (London, J. Murray, 1906. Q41.B8, 1905).

1014

Fortgesetzte Beobachtungen und Mitteilungen vom Halleyschen Kometen. Astronomische Nachrichten, Bd. 185, Nr. 4420, 17. Juni 1910: columns 55–60. plate. QB1.A77, v. 185

Reports (in English) from the Transvaal Observatory by R. T. A. Innes concerning visual observations made Apr. 13–24 and by H. E. Wood on photographs taken Apr. 11–24; from Íñiguez (in Spanish) at Madrid; from Francesco Contarino (in Italian) at Capodimonte; and from K. D. Pokrovskiĭ in Dorpat (on his observations in southern Russia) and Julius Fényi in Kalocsa. The plate reproduces a photograph by Wood on Apr. 21, a sketch of the head by Innes on Apr. 24, and from Íñiguez, photographs taken May 5 and 11 and spectrograms made May 9 and 11.

A correction to the report from Innes appears in Nr. 4435, 23. Aug. 1910, columns 311–312.

An English translation of Fényi's report was published in *America*, v. 3, July 23, 1910, p. 400 (BX801.A5, v. 3).

1015

Forward, Robert L. Comet catcher: dazzling new engines will drive this probe toward a celestial rendezvous. Omni, v. 2, Feb. 1980: 54–58, 60, 97. col. illus. AP2.O452, v. 2

Chiefly about the mercury-ion thrusters intended to power the spacecraft for the Halley/Tempel 2 mission.

1016

Fotografie della cometa d'Halley. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 5, genn. 1911: 24–25.

1017

Fournier, Georges. Observations effectuées à l'observatoire de la société. *In* Société astronomique de France. Bulletin, 24. année, sept. 1910: 396–397. QB1.S6, v. 24

Summarizes interesting observations of the comet made by members during May.

1018

Fowler, Alfred. Photographs and spectrum of Halley's Comet. Science, new ser., v. 32, Dec. 16, 1910: 886. Q1.S35, n.s., v. 32

Abstract of a paper presented at the 11th meeting of the Astronomical and Astrophysical Society of America, Aug. 17–19, 1910, in Cambridge, Massachusetts. Reprinted in the Society's *Publications*, v. 2, p. 18 (QB1.A27, v. 2).

1019

France. *Bureau des longitudes*. Comète 1909 c (1910 II). Comète de Halley. *In its* Annuaire pour l'an 1911. Paris, Gauthier-Villars [1910?] p. 203–219. QB9.F8, 1911

1020

Franklin, Kenneth L. Here comes the heavens' most notorious 'dirty snowball.' Science digest, v. 87, Apr. 1980: 30–33. illus. Q1.S383, v. 87

1021

Franz, Julius H. G. Durchgang der Erde durch den Schweif des Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4408, 2. Mai 1910: columns 267–270. QB1.A77, v. 184

Considers the possibility of meteor showers at the time of the earth's passage through the comet's tail.

1022

Franz, Julius H. G. Kometen und der Halleysche Komet. Deutsche Revue, 35. Jahrg., Jan. 1910: 70–78. AP30.D35, v. 35

1023

Franzisket, Wilhelm. Zigeuner des Weltenraums; zur Wiederkunft des Halleyschen Kometen April–Mai 1910. Westermanns Monatshefte, 54. Jahrg., Mai 1910: 264–271. illus., ports. AP30.W5, v. 54

One of the portraits represents Palitzsch (engr[illegible]d by M. Keyl, Dresden, 1767).

1024

La Frayeur populaire et la comète de Halley. Cosmos, t. 61, 16 oct. 1909: 426–427.

1025

Freeman, Edward A. The comet of 1066. *In his* The history of the Norman conquest of England. v. 3. The reign of Harold and the interregnum. [2d ed., rev. Oxford, At the Clarendon Press, M.DCCC.LXXV] New York, AMS Press [1977] p. 645–650. DA195.F855 1977, v. 3

Presents passages from a number of continental annals in which the comet is mentioned. The effects of the comet's appearance are discussed on p. 70–73 of the main text.

1026

[Frege, Christian A.] Der Komet von 1759, wiederkehrend im Jahre 1835, wahrscheinlich das von den heiligen drei Königen beobachtete Gestirn. Zeitz, Webel, 1818.

——— Mit angehängter Uebersicht des Wissenswürdigsten über den Lauf und die Natur der Kometen. 2. Aufl. Zeitz, Webel, 1834. 48 p.

A copy of an 1819 imprint is listed under subject, "Comet [Halley's]," in the *Catalogue of the Library of the Royal Astronomical Society* (London, 1886).

1027

Freitag, Ruth S. Elliptical designs: Halley's Comet as a medium for advertising messages. *In* U.S. *Library of Congress.* Quarterly journal, v. 40, summer 1983: 266–277. illus. (part col.) Z881.U49A3, v. 40

Short article accompanying reproductions of 17 advertisements and a cartoon from various 1910 periodicals.

1028

French participation in Soviet Venus/Halley mission modified. Aviation week & space technology, v. 114, Apr. 27, 1981: 152. TL501.A8, v. 114

1029

Friedlander, Alan L., *and* William C. Wells. Comet rendezvous mission study. [Chicago, IIT Research Institute, 1971] 153 p. illus. (Report no. M–28) Sci RR

NASA accession no. N73–13823.

References (41): p. 151–153.

The purpose of the study was to establish the value and characteristics of comet rendezvous missions. Such missions are considered for four comets: P/Encke, P/d'Arrest, P/Kopff, and P/Halley. "Practical accomplishment of the very difficult rendezvous with P/Halley depends upon the development of nuclear electric propulsion by 1983."

1030

Friedlander, Alan L. Halley's Comet flythrough and rendezvous missions via solar electric propulsion. [Chicago] IIT Research Institute, 1971. 92 p. illus. (Report no. T–28) Sci RR

NASA accession no. N71–34992.

References (11): p. 91–92.

1031

Friedlander, Alan L. Halley's Comet flythrough and rendezvous missions via solar electric propulsion. AAS/AIAA Astrodynamics Specialists Conference 1971, Ft. Lauderdale, Florida, August 17–19, 1971. Tarzana, Calif., Univelt [1972] 32 p. illus. (AAS [paper] 71–363) Sci RR

References (6): p. 32.

"Trajectory characteristics and payload capabilities are described for missions to Halley's Comet at the 1985–86 apparition."

1032
Friedlander, Alan L., John C. Niehoff, *and* John I. Waters. Trajectory and propulsion characteristics of comet rendezvous opportunities. [Chicago] IIT Research Institute, 1970. xvi, 175 p. illus. (Report no. T–25) Sci RR

NASA accession no. N71–36140.
References (19): p. 105–106.
"... re-examines spacecraft mission opportunities to short-period comets in the time period 1975–95." A mission to P/Halley is among the 16 considered.

1033
Friedlander, Alan L., John C. Niehoff, *and* John I. Waters. Trajectory requirements for comet rendezvous. Journal of spacecraft and rockets, v. 8, Aug. 1971: 858–866. illus. TL787.A62A2, v. 8

References (11): p. 866.
Includes consideration of a Halley mission.

1034
Friedman, Louis D. The Halley rendezvous via solar sailing mission description. *In* Shuttle-Based Cometary Science Workshop, *Huntsville, Ala., 1976.* Proceedings of the Shuttle-Based Cometary Science Workshop, a forum for the presentation and discussion of possible shuttle-based experiments and observations of comets and cometary-like materials. Sponsored by the University of Alabama in Huntsville and the George C. Marshall Space Flight Center. Huntsville, Alabama, November 4–5, 1976. Marshall Space Flight Center, Ala., National Aeronautics and Space Administration, George C. Marshall Space Flight Center [1977] (NASA TM–82317) p. 251–256. illus. Sci RR

NASA accession no. N81–24144.

1035
Friedman, Louis D. The International Halley Watch. *In* International Astronautical Congress, *31st, Tokyo, 1980.* Applications of space developments. Selected papers from the XXXI International Astronautical Congress, Tokyo, 21–28 September 1980. Edited by L. G. Napolitano. Oxford, New York, Pergamon Press [1981] p. 273–290. illus. TL787.I443 1980

References (6): p. 290.
"The International Halley Watch (IHW) is designed to coordinate observations and measurements of the 1985–86 apparition of Halley's Comet. Observations will take place from deep space, Earth orbit, nonorbital flight, and the ground. The IHW will promote cooperation, communication, and standardization of Halley studies among involved organizations and personnel."

1036
Friedman, Louis D., *and* Ray L. Newburn. The International Halley Watch: a program of coordination, cooperation and advocacy. *In* Modern observational techniques for comets; proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. Pasadena, Calif., National Aeronautics and Space Administration,

Jet Propulsion Laboratory, California Institute of Technology, 1981. (JPL publication 81-60) p. 313–314. DN-Ob

1037

Friedman, Louis D., *and others*. Solar sailing—the concept made realistic. AIAA 16th Aerospace Sciences Meeting, Huntsville, Alabama/January 16–18, 1978. New York, American Institute of Aeronautics and Astronautics, 1978. 16 p. illus. (AIAA paper 78-82) Sci RR

References (30): p. 15–16.

"This paper describes the Solar Sail technology program and the baseline design produced for the Halley Comet Rendezvous Mission." The mission is also described.

1038

Friedman, Louis D. A solar sailor to Halley. *In* American Astronomical Society. Bulletin, v. 9, no. 3, 1977: 463. QB1.A255, v. 9

Abstract of a postertalk presented at a meeting of the Planetary Sciences Division, Jan. 19–22, 1977, at Honolulu, Hawaii.

1039

Fröhlich, Otto. Beobachtungen in der Kometennacht. Das Wetter, 27. Jahrg., Juni 1910: 137–139.

Observations made at the Königliche Erdbebenwarte at Krietern near Breslau. Includes a table showing temperature, humidity, hygrometer and barograph readings, wind strength and direction, cloud types, and other observations made hourly from 4 p.m., May 18, through 7 a.m, May 19.

1040

Frost, Edwin B. Observing a comet; a sketch of the world-wide study of Halley's Comet. World to-day, v. 19, July 1910: 785–790. illus. AP2.H4, v. 19

1041

Frost, Edwin B. Radial velocity of Halley's Comet as derived from a spectrogram. Popular astronomy, v. 19, Nov. 1911: 558–559. QB1.P8, v. 19

Presented at the 12th meeting of the Astronomical and Astrophysical Society of America, Aug. 25, 1911, in Ottawa.

An abstract appears in *Science*, new ser., v. 34, Oct. 20, 1911, p. 532 (Q1.S35, n.s., v. 34), and in the Society's *Publications*, v. 2, p. 69 (QB1.A27, v. 2).

1042

Die früheren Erscheinungen des Halleyschen Kometen. Sirius, 41. Bd., Okt. 1908: 231–232. DN-Ob

On the investigations of Cowell and Crommelin and the earlier studies of Hind.

Also published, with some changes, in *Jahrbuch der Astronomie und Geophysik*, 19 Jahrg., 1908, p. 51–53 (Leipzig, E. H. Mayer, 1909. Q9.J13, v. 19).

1043
Fuchs, Albert. Kometen und andere Wahrzeichen des Himmels im elsässischen Volksaberglauben. Elsässische Monatsschrift für Geschichte und Volkskunde, Feb. 1910: 90–101.

Bibliographic footnotes.

Cites old chronicles in which comets and the fears they aroused are recorded. These include a few references to appearances of Halley's Comet.

1044
Furness, Caroline E. Observations of minor planets and comets made at the Vassar College Observatory with the 12-inch refractor. Astronomische Nachrichten, Bd. 189, Nr. 4516, 31. Juli 1911: columns 59–62.
QB1.A77, v. 189

Includes observations of Halley's Comet made Feb. 1 and 12, 1910.

1045
Further observations of Halley's Comet. Nature, v. 83, June 16, 1910: 470–471. Q1.N2, v. 83

Summarizes a number of reports published in *Astronomische Nachrichten*, Nr. 4415–4418, and the *Comptes rendus* for June 6; notes the showing of photographs taken at Helwan, Kodaikanal, Johannesburg, and elsewhere at a meeting of the Royal Astronomical Society on June 10; and describes accounts received from Mr. Leach at Malta and J. W. Scholes observing at Morecambe Bay.

1046
Further observations on the present comet. Gentleman's magazine, v. 29, May 1759: 204. AP4.G3, v. 29 Rare Bk. Coll.

Letter dated May 27 and signed Astrophilus.

Published also in the *Scots Magazine*, v. 21, May 1759, p. 246 (AP3.S35, v. 21).

1047
Gabba, Luigi, *and* Luigi Volta. Osservazioni della cometa di Halley (1909 c) fatte al R. Osservatorio astronomico di Milano. Astronomische Nachrichten, Bd. 187, Nr. 4472, 8. Feb. 1911: columns 125–126.
QB1.A77, v. 187

1048
Gabba, Luigi, *and* Luigi Volta. Osservazioni della cometa 1910a e della cometa di Halley, nota. *In* Istituto lombardo di scienze e lettere, *Milan*. Rendiconti, ser. 2, v. 43, fasc. 18/19, 1910: 835–848.
AS222.L616, s. 2, v. 43

1049
Gabry, Petrus. Observatio cometae, qui mense Maio A. 1759 apparuit, facta Hagae-Comit. ... Communicated by Mr. Emanuel Mendez da Costa. *In* Royal Society of London. Philosophical transactions. v. 53; 1763. London, Printed for L. Davis and C. Reymers, Printers to the Royal Society, against Gray's-Inn Gate, in Holbourn, M.DCC.LXIV. p. 3–4.
Q41.L8, v. 53 Rare Bk. Coll.

Read Jan. 13, 1763.

The observations were made May 2, 3, 6, and 7.

1050

Gale, Walter F. [Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 21, Nov. 1910: 121–123. QB1.B75, v. 21

Reports observations made at Sydney, N.S.W., on May 17–22, 25, and 29.

1051

Galle, Johann G. Verzeichniss der Elemente der bisher berechneten Cometenbahnen nebst Anmerkungen und Literatur-Nachweisen. Neu bearb., erg. und fortgesetzt bis zum Jahre 1894. Leipzig, W. Engelmann, 1894. xviii, 315 p. CSt; CU; CtY; DN-Ob; ICU; MA; MiU; NNC NjP; OCU; PSC; PU; RPB; TxU; WaU

The tables and notes include information on the following apparitions of Halley's Comet:

12 B.C. and A.D. 66 and 141: p. 2–3, [151];
837: p. 2–3, 152;
989 and 1066: p. 2–3, 153;
1301: p. 4–5, 154;
1378: p. 4–5, 155–156;
1456: p. 6–7, 157;
1531: p. 6–7, 158;
1607: p. 10–11, 161–162;
1682: p. 12–13, 165–166;
1759 I: p. 18–19, 171–172; and
1835 III: p. 50–51, 199–200.

The entry on p. 153 for the 1066 comet also mentions that of 141, and the entry on p. 154 for the 1301 comet also gives information on 12 earlier apparitions (66, 218, 373, 530 or 531, 608, 684, 760, 837, 912, 989, 1145, and 1223).

1052

Galleeva kometa v 1910 godu. Obshchedostupnoe izd. O vselennoĭ. O kometakh. O kometi͡e Gallei͡a. Odessa, Izd. Matezis, 1910. 32 p. illus., port.

1053

Garavito Armero, Julio. Calculo de los efemerides del cometa de Halley. *In* Colombia. *Ministerio de Educación Nacional.* Revista de la instrucción pública de Colombia, t. 25, marzo 1910: 232–259.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 599.

1054

Garrido, Ricardo H. Cometa de Halley (1909 c). *In* Granada (City). Observatorio Astronómico de Cartuja. Relación anual. Año de 1910. Granada, Tip. de López Guevara, 1911. p. 5–6. QB82.G45, 1910

Includes descriptive notes of observations made May 20 – June 30.

1055

Gasca, Jesús. El cometa de Halley en 1910. *In* Academia Nacional de Ciencias Antonio Alzate, *Mexico*. Revista científica y bibliográfica, t. 30, julio de 1911: 46–70. illus., port. Q23.A6, v. 30

"Estudio sometido al juicio de la Sociedad Científica 'Antonio Alzate' y de la Sociedad Astronómica de México."

1056

Gasser, Achilles P. Von dem Cometen oder Pfawenschwantz, so in etlichem hochteutschland umb den X. tag des Augsten sich zu erst erzeygt, vnd darnach vil nächt ob aines raissspiess lang, anderthalb schuch breyt, am himel gesehen ist worden, nach der gepurt Christi M.D.XXXj. jar. [n.p., 1531] broadside (1 p.) illus.

A copy is ascribed to the Stadtbibliothek at Nuremberg by Karl Heinz Burmeister in his *Achilles Pirmin Gasser*, v. 2, *Bibliographie*, p. 34 (Wiesbaden, G. Pressler [1970] CT1098.G37B87, v. 2).

The small cut shows a comet with captions on four sides indicating its orientation with reference to the four cardinal points.

1057

Gasser, Auguste. La comète de Halley et les anciennes chroniques alsaciennes. Cosmos, t. 62, 29 jan. 1910: 118.

Translates extracts from the annals of the Dominicans of Colmar, 1211–1305; the chronicle of Sebald Buchler of Strasbourg, 1506–86; the records of the Dominicans of Guebwiller, 1124–1723, and the chronicles of the Franciscans of Thann, 1182–1700.

1058

[Gautier, Alfred] Sur le retour de la comète de Halley. Bibliothèque universelle des sciences, belles-lettres et arts; sciences et arts, t. 59, juin 1835: 209–212. Q2.A77, v. 59

Includes data from observations made by Müller at the Geneva observatory during the period Aug. 31–Oct. 3, 1835.

1059

[Gautier, Alfred] Sur les apparences de la comète de Halley en 1835 et 1836. Bibliothèque universelle de Genève, nouv. sér., t. 1, jan. 1836: 138–142. AP24.B5, n.s., v. 1

1060

Gautier, Étienne Alfred Émile. Travaux relatifs à la dernière apparition de la Comète de Halley. *In his* Essai sur la théorie des perturbations des comètes. Genève, Impr. de. F. Ramboz, 1847. p. 107–120. QB357.G38

Diss.—Geneva.

1061

Gautier d'Agoty, Jacques. Contre-prédiction de la comète de 1757 ou 1758. Paris, 1757.

Mentioned in Lalande's *Bibliographie astronomique*, p. 463, with the note "Cela ne mérite pas d'être cité."

The existence, but not the title, of this "petite Brochure" is confirmed by a notice in the *Mémoires pour l'histoire des sciences et beaux-arts*, oct. 1757, 1. v., p. 2480–2481 (AS161.T8, 1757).

Gautier, an anti-Newtonian, predicted that the comet would never reappear. He believed that comets as such did not exist; the objects thought to be comets were, in his view, actually rainbows, aurorae, or other meteorological phenomena.

1062
Gelcich, Eugen. Der Halleysche Komet. Deutsche Rundschau für Geographie, 33. Jahrg., 1. Heft, Okt. 1910: 30–31. illus. G1.D3, v. 33

A brief summary of scientific observations.

1063
Gelpke, August H. C. Über die Entstehungsart und Beschaffenheit der Kometen, wie auch über die Bahn und den Lauf des Halley'schen Kometen für das Jahr 1835. Braunschweig, E. Leibrock, 1835. 56 p. fold. plates. NNC

Contents: 1. Abschnitt. Kurze Darstellung der fünf Erscheinungsarten des Halley'schen Kometen in den Jahren 1456, 1531, 1607, 1682 u. 1759.—2. Abschnitt. Von dem Laufe des Halley'schen Kometen im Jahre 1835 und der Bahn desselben.—3. Abschnitt. Ueber die Entstehungsart und Beschaffenheit der Kometen.

The plates provide the following: (1) a table of orbital elements for the known periodic comets; (2) the comet's near-sun orbit and the earth's orbit, with positions marked during the period Aug. 23–Dec. 29, 1835; and (3) the comet's path in the heavens, Aug. 14–Oct. 13, 1835.

1064
General Electric Company. Thermionic spacecraft design study. 120 kw nuclear electric propulsion system. Final report. v. 1. Summary. Philadelphia, General Electric Co., Nuclear Systems Programs, Space Systems, 1971. [75] p. illus. (GESP-648) Sci RR

NASA accession no. N71-37377.

References (6): p. [75].

"Electrically propelled spacecraft designs for a Comet Halley rendezvous mission, using thermionic reactors as the electrical power source were investigated."

1065
General Electric Company. 200 watts/kilogram solar array conceptual approach study. Phase II. Assessment report. Assessment report for proof-of-concept experiments and Halley's Comet concentrator array. Performed ... for the Jet Propulsion Laboratory, Pasadena, California. Philadelphia, General Electric Space Division, Valley Forge Space Center, 1977. [69] p. illus. (NASA CR-153933) Sci RR

NASA accession no. N77-28580.

1066
Georges, R. Gare la comète! Chansonette. Paroles de Bouchard (dit Dufleuve). Paris, M. Labbé, 1910.

For voice and piano.

1067
Gerard, John. Of a bull and a comet. Month, v. 109, Feb. 1907: 151–157. AP4.M65, v. 109

Bibliographic footnotes.

"That a Pope did once solemnly ban and anathematize a comet, bidding it begone from the sky, is an old story, much in favour with certain writers who love to descant upon the ignorance and ineptitude of our pre-scientific ancestors, as contrasted with our own enlightened age, when no one speaks of what he does not know, or makes statements which he is not ready to support by conclusive evidence."

1068

Gerstl, Wolf. Der Halley'sche Komet im Talmud. Das Weltall, 9. Jahrg., 1. Sept. 1909: 382–383. QB1.W4, v. 9

1069

Giacobini, Michel. Observations de la comète de Halley, faites à l'observatoire de Paris (équatorial de la tour de l'Est de 0^m,38 d'ouverture). Bulletin astronomique, t. 27, oct. 1910: 394–395. QB1.B9, v. 27

Made Nov. 5, 1909–June 18, 1910.

The observations of Nov. 5–7, 1910, were first published in the *Comptes rendus hebdomadaires des séances* of the Académie des sciences, t. 149, 8 nov. 1909, p. 763–764 (Q46.A14, v. 149).

1070

Giacobini, Michel. Sur la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 18 avril 1910: 955. Q46.A14, v. 150

Describes an observation made at Paris on Apr. 17.

For an English translation and analysis of the significance of this observation, see "Halley's Comet: Visibility in Broad Daylight in April, 1910," by Joseph N. Marcus, in *Comet News Service*, Mar. 21, 1983 (item 1998).

1071

Giacobini, Michel. Sur la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 6 juin 1910: 1496–1497. Q46.A14, v. 150

On a remarkable change in the nucleus observed June 2.

Reprinted, with a few slight changes and a different title, in the *Bulletin* of the Société astronomique de France, 24. année, août 1910, p. 370 (QB1.S6, v. 24).

1072

Gibel′ mīra 18-go mai͡a 1910 goda ot komety Gallei͡a, po izsli͡edovanīi͡am izvi͡estnago prof. Kamilli͡a Flammarīona. Izd. 3. Moskva, Tip. Evangel. O-va IUnosheĭ, 1910. 16 p.

1073

Giclas, Henry L. Photographic observations of comets at Lowell Observatory. *In* Modern observational techniques for comets; proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. (JPL publication 81–68) p. 202–213. illus.

DN-Ob

Reviews the 1910 observations of Halley's Comet, using the photographs taken on May 13 "as an example of utilizing every possible observational resource available at the Observatory at that time."

1074
Giesen, Walter. Zur Wiederkunft des Halleyschen Kometen. Prometheus, 21. Jahrg., 1. Dez. 1909: 134–137.

1075
Gignoux, Régis. La vie de Paris: en attendant la comète. Le Figaro, 56. année, 3 mai 1910: 1. N&CPR

See also the following stories by the same author: "La comète: présente et invisible" in the issue of 18 mai, p. 3; "La comète: effet manqué; à l'Observatoire de Meudon" (followed by an unsigned article headed "Au Bureau des longitudes") in the issue of 19 mai, p. 3; and "La comète" in the issue of 20 mai, p. 3.

1076
Gil y Luengo, Constantino. El cometa. Blanco y negro, año 20, 8 de junio de 1910: [16] illus. AP60.B6, 1910

Poem. The sketch is by Medina Vera.

1077
Gilbert, S. Gilbert's guide to, and history of, Halley's Comet. 4th ed. [London, J. Trapp, Printers, 1834] 11 p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 400.

The cut shows the comet's path during 1835–36.

An edition dated 1835 is held by NN.

1078
Gilmore, A. C. Halley's Comet in 1986. Southern stars, v. 24, Mar. 1973: 139–141. QB1.R788, v. 24

References (3): p. 141.

1079
Gingrich, Curvin H. Photographs of Halley's Comet. Popular astronomy, v. 18, Aug./Sept. 1910: 432A. plate. QB1.P8, v. 18

The plate reproduces photographs taken at Goodsell Observatory on May 25, May 27, May 28, and June 2.

1080
Gingrich, Curvin H. Positions of Halley's Comet with reference to the planets in 1909–10. Popular astronomy, v. 18, Jan. 1910: 48. illus. QB1.P8, v. 18

The diagram accompanies a short note on the comet (p. 47) in Herbert C. Wilson's "Astronomical Phenomena in 1910."

1081
Giotto. *In* European Space Agency. ESA bulletin, no. 25, Feb. 1981: 36–37; no. 28, Nov.: 36–37; no. 29, Feb. 1982: 50–52; no. 31, Aug.: 64–66; no. 32, Nov.: 48–50; no. 34, May 1983: 37–38; no. 35, Aug.: 55–57. illus. TL787.E88a, 1981–1983

Brief reports, in French and English, in the section entitled "Programmes Under Development and Operations/Programmes en cours de réalisation et d'exploitation."

1082
Giotto--and Halley's Comet. *In* European Space Agency. ESA newsletter, no. 4, Dec. 1982: 1. illus.

Briefly describes worldwide plans for spacecraft and ground-based observations of the comet.

1083
Giotto delays Hipparcos. New scientist, v. 87, July 17, 1980: 184. illus.
Q1.N52, v. 87

The European Space Agency's Science Programme Committee announces approval of a project for a spacecraft to intercept Halley's Comet shortly after perihelion. This will result in a delay of six months in the Hipparcos satellite, which will measure star positions.

1083a
Giotto, Halley's Comet interceptor. Mechanical engineering, v. 104, Nov. 1982: 73.
TJ1.A72, v. 104

1084
Giotto satellite will traverse flight path of Halley's Comet. Industrial research & development, v. 24, Sept. 1982: 88–89.
T175.I494, v. 24

1085
The Giotto spacecraft gas and plasma environments. Proceedings of a series of workshops held at ESTEC, Noordwijk, The Netherlands, in 1980/1981. [Compiled by W R Burke] Paris, European Space Agency, 1982. 58 p. illus. (ESA SP–187)

NASA accession no. N82–25962.

Includes bibliographic references.

Contents: Grard, R. J. L. Foreword.—Pailer, N., and E. Grün. Production of secondary particles by neutral and ionised cometary gas and dust impacting on the shield of the Giotto spacecraft.—Hornung, K. Update of the impact ionization problem.—Maassberg, H., and U. Isensee. Electrostatic charging of the Giotto spacecraft due to neutral gas impact.—Maassberg, H., and U. Isensee. Differential charging model of solar panels.—Young, D. T. Estimates of a spacecraft induced gas cloud and its effects on measurement of ambient particles during a fast flyby of Comet Halley.—Grard, R. J. L. Considerations on surface potentials, wake effects and related experimental investigations associated with a cometary flyby.

These studies update those published in *The Comet Halley Probe Plasma Environment* (ESA SP–155) and take account of the increase in flyby velocity from 57 km/s to 68 km/s.

1086
Giotto—the European Space Agency's mission to encounter Halley's Comet. COSPAR information bulletin, no. 96, Apr. 1983: 46–47.
TL787.C2, 1983

"ESA Information Note of 15 November 1982."

1087
GIOTTO—the European spacecraft to flyby Halley's Comet. Dornier post (English ed.), no. 2, 1983: 68–74. illus. (part col.)
By Günther Lehn (see inside back cover of issue).

1088
Giotto, un nouveau programme scientifique de l'Agence spatiale européenne. COSPAR information bulletin, no. 90, Apr. 1981: 68. TL787.C2, 1981
"Extract from 'La Lettre du CNES' No. 73 of 8 December 1980."

1089
Girtanner, Christoph. Beobachtung eines Kometen, im Jahr 1531. durch Joachim von Watt, in St. Gallen. (Aus einem alten Manuscript gezogen.) Schweizerisches Museum, 2. Jahrg., Christmonat 1784: 535–539. DSI

1090
Glackens, Louis M. The heavenly porter. Puck, v. 67, May 18, 1910: [1] col. illus. AP101.P7, v. 67
Full-page cartoon. The comet, dressed like a porter, with a large clothes-brush for a tail, addresses the earth, "Brush yo' off, suh? Ain't gwine to be 'round ag'in foh sev'ty-five yeahs!"

1091
Glackens, Louis M. Stayed up to see it. Puck, v. 67, May 11, 1910: [6] illus. AP101.P7, v. 67
Cartoon. Inebriated gentleman addresses a policeman while pointing to a street lamp (of which he seems to see several), saying, "Orfsher, 'blige me! Whish one er thosh ish Halleysh Comet?"

1092
Glasmachers, A., P. Dullenkopf, J. W. Klein, *and* J. Melbert. Electronic system for an impact mass spectrometer with high dynamic range for the Giotto probe. IEEE transactions on nuclear science, v. NS–29, Feb. 1982: 160–163. illus. TK9001.I2, v. NS–29
References (5): p. 163.
"The measurement objectives of the space probe Giotto include the analysis of the dust particles of the comet HALLEY with an impact mass spectrometer of the 'time-of-flight' type."

1093
Glazenap, Sergeĭ P. Aufforderung betr. Beobachtungen des Halley'schen Cometen. Astronomische Nachrichten, Bd. 134, Nr. 3216, 1. März 1894: columns 399–400. QB1.A77, v. 134
Requests that any unpublished observations be sent to the Russian astronomical society which is undertaking to calculate the orbit for the comet's 1910 return. The request also appears, under the heading "Halley's Comet," in *Nature*, v. 49, Mar. 8, 1894, p. 442 (Q1.N2, v. 49).

1094
Glazenap, Sergeĭ P. Opashkata na Khaleevata kometa i zemi͡ata. Priroda (Sofii͡a), g. 16, broĭ 3/4, 1910: 66–67. illus. QH7.P665, v. 16
The Rudaux drawing, with Russian captions, is reproduced.

1095

Gleuns, Willem, *the younger*. Iets over de kometen. Met een kaartje, voorstellende de loopbaan der Komeet van Halleij in 1835. Te Groningen, Bij J. Oomkens, 1835. 15 p. fold. plate.

Held by the Crawford Library of the Royal Observatory, Edinburgh under shelfmark CR. C2. 163.

1096

Gnaga, Arnaldo. La cometa e il finimondo, letture popolari. Brescia, Tip. Lenghi, 1910. 62 p.

1097

Goatcher, Alfred Winton. Halley's Comet 1910. English mechanic and world of science, v. 91, July 29, 1910: 591–592. illus. T1.E5, v. 91

Letter to the editor describing observations made at Krom River, Cape Colony, Apr. 13–June 25. Small pictures show the comet's appearance on various dates in April and May.

1098

Goatcher, Alfred Winton. Notes on Halley's Comet, April 13 to May 3, 1910. *In* British Astronomical Association, *London*. Journal, v. 20, May 1910: 430–433. QB1.B75, v. 20

Observations were made at Krom River, Cape Colony. See also additional notes, dated May 1–17, in the June issue, p. 503–505.

1099

Göttinger Expedition nach Island zur Beobachtung etwaiger elektromagnetischer Störungen beim Durchgang der Erde durch den Schweif des Halleyschen Kometen. Sirius, 43. Bd., Mai 1910: 114–115. DN-Ob

1100

Goetz, Edmond A. Notes by Father E. Goetz, Bulawayo Observatory. (Kindly communicated.) *In* Johannesburg. Transvaal Observatory. Circular, no. 4, July 11, 1910: 30–31. illus. DN-Ob

Observations made Apr. 15–May 27, 1910. A sketch shows the formation of the nucleus and adjacent regions as it appeared May 13.

1101

Goldreich, Peter, *and* William R. Ward. The case against Planet X. *In* Astronomical Society of the Pacific. Publications, v. 84, Oct. 1972: 737–742. illus. QB1.A4, v. 84

References (4): p. 742.

Considers the dynamical consequences of the hypothetical trans-Plutonian planet suggested by Brady and concludes that such a planet "cannot be responsible for the unexplained residuals in the orbit of Halley's comet . . ." The authors point out that these "can be explained in terms of nongravitational forces and the weak orbital binding energy of this object."

1102

Golubev, V. A. Korotkozhivushchie obrazovanii͡a v golove komet. *In* Problemy kosmicheskoĭ fiziki. vyp. 14. Kiev, Izd-vo pri Kievskom gosudarstvennom universitete izdatel′skogo ob″edineniia͡ "Vishcha shkola," 1979. p. 96–102. illus.

Cites 15 references.

"From the analysis of description of short life-time formations in the comet Halley's (1910 II) head their peculiarities are discussed. The evaluations of dimensions, life-times and the escape velocities of these formations are given."—*Astronomy and Astrophysics Abstracts*, v. 26, p. 360.

1103

Gombosi, Tamás. A kutatás hazai műhelyeiben: üstököskutatás—magyar részvétellel. Élet és tudomány, 37. évf., 1982. IV. 2.: 439–442. illus. (part col.) Q44.E5, v. 37

Chiefly about Halley's Comet and Hungarian participation in the Soviet VEGA program.

1104

Gombosi, Tamás. Üstököskutatás magyar részvétellel. Magyar tudomány, 90. köt., 1983. ápr.: 256–269. illus. AS142.M3515, v. 90

Covers much the same ground as item 1103 but goes into more detail.

1105

Gonçalves, Alphen D. Observaçoes astronomicas sobre o cometa de Halley, a vista da Bahia, em 1910. Bahia, 1910. 60 p. illus.

Item A346 in the *Catalogue alphabétique*, t. 3 (Bruxelles, Hayez, 1913. Z5156.B92, v. 3), of the Bibliothèque de l'Observatoire royal de Belgique.

Bibliography: p. 57–60.

1106

Gondolatsch, Friedrich. Eine Methode zur räumlichen Bahnbestimmung bewegter Kometenschweifmaterie (mit Anwendung auf den Halleyschen Kometen). Kiel, Druck von C. Schaidt, Inhaber G. Oheim, 1929. 12 p. (Mitteilungen des Astronomischen Rechen-Instituts Berlin-Dahlem, Bd. 2, Nr. 6) DN-Ob; OU

Bibliographic footnotes.

An extract appears in *Astronomische Nachrichten*, Bd. 237, Nr. 5665, 6. Nov. 1929, columns 1–10.

1107

Gonnessiat, François. Observations de la comète de Halley faites à l'equatorial coudé (0.32 m) de l'observatoire d'Alger par M. F. Sy. Astronomische Nachrichten, Bd. 184, Nr. 4403, 15. Apr. 1910: columns 185–188; Bd. 186, Nr. 4453, 5. Nov. 1910: columns 203–208. QB1.A77, v. 184, 186

Observations made Nov. 12, 1909–Mar. 9, 1910, and Apr. 10–July 10, 1910.

1108

Gonnessiat, François. Observations de la comète de Halley faites à l'equatorial coudé (0.32 m) de l'observatoire d'Alger par MM. F. Gonnessiat et F. Sy. Astronomische Nachrichten, Bd. 187, Nr. 4481, 6. März 1911: columns 351–352. QB1.A77, v. 187

Observations made Dec. 2–7, 1910. See also Gonnessiat's telegram reporting an observation made Feb. 25, published in Nr. 4479/4480, 2. März 1911, columns 335–336.

1109
Gonnessiat, François. Observations de la comète de Halley faites à l'equatorial coudé (0.32 m) de l'observatoire d'Alger par MM. F. Gonnessiat et F. Sy. Astronomische Nachrichten, Bd. 188, Nr. 4512, 13. Juli 1911: columns 411–414. QB1.A77, v. 188

Observations made Dec. 30, 1910–Apr. 29, 1911. A correction appears in Bd. 189, Nr. 4519, columns 143–144.

1110
Gonnessiat, François. Observations de la comète de Halley 1909 c, faites à l'equatorial coudé (0.32 m) de l'observatoire de Alger. Astronomische Nachrichten, Bd. 182, Nr. 4368, 10. Nov. 1909: columns 403–404. QB1.A77, v. 182

Observations made Oct. 11–26 by the author and C. Rambaud.

A correction appears in Bd. 183, Nr. 4381, 5. Jan. 1910, columns 207–208.

1111
González Prieto, Francisco. Gran diploma de honor; poema dramático-lírico-épico-didáctico-trascendental. Obra nueva de enciclopedia artística precedida de un prólogo del notable abogado Don Florentino Villarroya de Mendoza, de Barcelona, y dedicada al Cometa Halley, el rey de los cometas, que vendrá hacia el 20 de julio de 1912, salve error de perturbaciones planetarias, según los cálculos del autor. Gijón, Tip. de Lino V. Sangenis, 1910. 48 p. TxU

1112
Goodbread, David. Halley's Comet. Popular astronomy, v. 18, Nov. 1910: 576. QB1.P8, v. 18

During an observation made on May 27, the writer noted a flash from the nucleus and a subsequent flare-up which lasted several seconds.

1113
Gore, John Ellard. The coming comet. *In his* Studies in astronomy. London, Chatto & Windus, 1904. p. [304]–307. QB51.G65

1114
[Gorham, George C.] The comet. London, Gardener, Wyld, Carey, and Jones, 1835. broadside.

"Two plates on one sheet: I. The relative positions of Halley's Comet and the Earth, August 20 to December 26; II. The whole orbits of Halley's, Encke's, and Biela's Comets, compared with the Planets. Accurately laid down from the calculations of M. Pontécoulant."—Advertisement in the *London Literary Gazette*, Sept. 26, 1835, p. 622 (AP4.L42, 1835), and the *Athenaeum* of the same date, p. 735 (AP4.A8, 1835). The attribution to Gorham appears in the cited issue of the *London Literary Gazette*, p. 619, the *Times* (London), Sept. 26, 1835, p. 7 (N&CPR), and the *Gentleman's Magazine*, new ser., v. 4, Oct. 1835, p. 416 (AP4.G3, n.s., v. 4).

1115

Gorham, George C. Halley's Comet. Times (London), Jan. 26, 1836: 3. N&CPR

Lengthy letter to the editor that includes documented details of the comet's appearance in 1456, 1531, 1607, 1682, and 1759, as well as 1835.

1116

Gough, M. P. The D-region and the orbital plane of Comet Halley. *In* International Symposium on Solar-Terrestrial Physics, *4th, São Paulo, 1974.* [Proceedings] v. 3. Atmosphere. [São José dos Campos, Instituto de Pesquisas Espaciais, 1974] p. 69–74. illus.

References (11): p. 72.

AIAA accession no. A75–22652.

1117

Graff, Kasimir R. Beobachtungen von Kometen am 9½-zölligen Äquatorial der Hamburger Sternwarte in Bergedorf. Astronomische Nachrichten, Bd. 184, Nr. 4402, 9. Apr. 1910: columns 161–166. QB1.A77, v. 184

Includes observations of Halley's Comet during Nov. 18, 1909 – Jan. 15, 1910.

1118

Graff, Kasimir R. Beobachtungen von Kometen am 26 cm-Äquatorial der Hamburger Sternwarte in Bergedorf. Astronomische Nachrichten, Bd. 190, Nr. 4539, 28. Nov. 1911: columns 43–50. QB1.A77, v. 190

Includes observations of Halley's Comet made Feb. 5–June 6, 1910 (columns 43–48).

1119

Graff, Kasimir R., *and* Holger Thiele. Beobachtungen von Kometen, kleinen Planeten und Veränderlichen im Jahre 1910 am 26 cm-Äquatorial der Hamburger Sternwarte in Bergedorf. Astronomische Nachrichten, Bd. 191, Nr. 4577, 4. Juni 1912: columns 301–314. QB1.A77, v. 191

Halley's Comet: columns 301–302, 309. Observations were made during the period Feb. 10–June 2, 1910. Comparison stars are listed in column 307.

1120

Graff, Kasimir R. Der Halleysche Komet; ein Rückblick auf seine vergangenen Erscheinungen. Himmel und Erde, 21. Jahrg., Oct.–Nov. 1908: 13–24, 75–90. illus., plate. Q3.H6, v. 21

Among the illustrations are sketches from Lubieniecki and drawings by Bessel and Herschel, as well as some from unidentified sources.

1121

Graff, Kasimir R. Kometa Gallei͡a. Odessa, Izd. "Mathesis," 1910. 71 p. illus.

Translated from the German. A short notice by V. Ter-Oganezov appears in *Izvi͡estii͡a* Russkago astronomicheskago obshchestva, vyp. 15, i͡anv. 1910, p. 254 (QB1.R9, v. 15).

1122

Graff, Kasimir R. Die Schweifrichtung des Halleyschen Kometen am 20. Mai 1910. Astronomische Nachrichten, Bd. 188, Nr. 4506, 20. Juni 1911: columns 315–316. illus. QB1.A77, v. 188

1123

Graff, Kasimir R. Zur Frage der Schweifrichtung des Halleyschen Kometen am 20. Mai 1910. Astronomische Nachrichten, Bd. 188, Nr. 4496, 11. Mai 1911: columns 131–132. QB1.A77, v. 188

1124

Graff, Kasimir R. Zur Geschichte und zur bevorstehenden Sonnennähe des Halley'schen Kometen. *In* Naturwissenschaftlicher Verein, *Hamburg*. Verhandlungen. 3. Folge, 18; 1910. Hamburg, L. Friederichsen, 1911. p. lvii–lviii. Q49.H43, 3.F., 18

Summary of a lecture given Feb. 23.

1125

Grandīoznai͡a kometa Gallei͡a, priblizhai͡ushchai͡asi͡a k zemli͡e s nevi͡eroi͡atnoĭ bystrotoĭ so skorostʹi͡u 3.000.000 kilometrov v denʹ ili 156.000 verst v chas. Odessa, Izd. Kh. G. Vorichenko, 1910. 15 p.

1126

Grant, Robert. History of physical astronomy, from the earliest ages to the middle of the nineteenth century. London, R. Baldwin, 1852. xx, 637 p. QB31.G7

Halley's investigation and prediction: p. 102–104. The 1835 return of the comet: p. 136–138. Chinese observations of its 1378 appearance: p. 288–289. Sir John Herschel's observations of the comet's volume: p. 301, 307–308. Additional references to Halley's Comet are scattered throughout chapter 15 (p. 292–316).

1127

Grant, Robert. Remarks on Hooke's observations of the comets of 1680 and 1682. *In* Royal Astronomical Society. Monthly notices, v. 14, Jan. 1854: 77–83. QB1.R7, v. 14

Notes that Hooke's account of physical changes "tallies completely with the observations of the comet of 1744 by Heinsius, and with the numerous observations of Halley's comet by Bessel and others in 1835."

1127a

Grard, Réjean J. L. Impact induced plasma during a cometary fly-by. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 167–176. illus. QB723.H2R4 1983

References (27): p. 176.

The Giotto spacecraft "will encounter comet Halley in March 1986 with a relative velocity of 69 km/s." This paper reviews and updates the work already performed by study groups investigating the effects on the spacecraft of the plasma cloud that will form around it as a result of the bombardment of its forward section by dust grains and neutral molecules.

1128

Grard, Réjean J. L., Lee W. Parker, *and* D. T. Young. Interaction between a body and its environment during a cometary fly-by. *In* Active experiments in space plasmas. Proceedings of Symposium 9 of the COSPAR twenty-third plenary meeting held in Budapest, Hungary, 2–14 June 1980. Edited by C. T. Russell and M. J. Rycroft. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1981] (Advances in space research, v. 1, no. 2) p. 403–407. illus. QC809.P5A28 1981

References (4): p. 407.

Considers the effects on the spacecraft and its instruments of the formation of a plasma cloud by the bombardment of dust grains and neutral molecules during a cometary flyby.

1129

Grard, Réjean J. L. A planar model of the probe electric environment. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP–155) p. 39–45. illus.

NASA accession no. N81–34116.

References (2): p. 45.

1130

Grard, Réjean J. L. Summary report of follow-up workshop. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP–155) p. 97–99. illus.

NASA accession no. N81–34121.

Reports briefly on new findings.

1131

Grasser, Johann J. Christenliches bedencken uber gegenwertigen Cometen, wie dann in gleichem uber andere Wunderzeichen, damit Gott der Allmächtige, der unbussfertigen bösen Welt, seine gerechte Gericht dräwet. Basel, Getruckt by J. Schröter, M. DC. XVIII. 24 p. illus.

Held by the British Library under shelfmark 8610. bb. 49. (2.).

Misfortunes heralded by comets are arranged in three categories: deaths of important persons; wars and rebellions; and floods, droughts, famines, earthquakes, severe storms, and pestilence. Comets are listed by date under each heading, and details of the ills which followed are given. In the first category are included entries for the comets of 837, 1301, and 1607; in the second, an entry for the comet of 1531; and in the third, an entry for the comet of 1607.

1132

Gray, Frederick. Halley's Comet observed in Ballarat, Australia—eclipse of the sun. English mechanic and world of science, v. 91, July 1, 1910: 497–498. T1.E5, v. 91

Letter to the editor includes description of comet observations made during May.

1133

Gt. Brit. *Nautical Almanac Office.* Ephemerides of Halley's Comet, for the month of October, 1835, at Greenwich Mean Midnight. [London] 1835. 1 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark P 63 (14).

Double ephemeris based on perihelion dates of Nov. 15 and Nov. 16.

1134

Gt. Brit. *Nautical Almanac Office.* Ephemeris of Halley's Comet, for the month of December, 1835. [London? 1835] 1 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR.C1. 402B. This copy was addressed to Charles Babbage.

Based on revised elements and a perihelion date of Nov. 15.93546 GMT.

1135

Gt. Brit. *Nautical Almanac Office.* Ephemeris of Halley's Comet, for the month of November, 1835. [London? 1835] 1 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 402A. This copy was addressed to Charles Babbage.

1136

The Great disappointment: Halley's Comet in its passege through the heavens. Illustrated London news, v. 136, May 28, 1910: 818. illus.
AP4.I3, v. 136

Reproduces a photograph taken on May 5 by Prof. Íñiguez.

1137

Green, Daniel W. E. Periodic comet Halley. Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1980. card. ([IAU] Circular no. 3459) DN-Ob

Quotes F. L. Whipple on the rotation period of the comet's nucleus, which he has determined to be $0\overset{\mathrm{d}}{.}4297$ or $10^{\mathrm{h}}19^{\mathrm{m}}$ (sidereal).

1138

Gren, A. Kometa Gallei͡a. Moskva, Izd. K-vo Maksimova, 1910. xvi p.

1139

Grew, Edwin S. Halley's Comet: the timepiece of the skies. Graphic, v. 81, May 28, 1910: 764. illus. AP4.G7, v. 81

The illustrations show an observatory erected at Fosterdown, near Caterham, for the observation of Halley's Comet, a sketch by G. Cati of the comet as seen at Malta on May 13 at 3:30 a.m., and a diagram by W. J. S. Lockyer showing the progress of the comet in the western sky, May 21–30.

1140

Griffin, Frank L. Halley's Comet and others. Chautauquan, v. 58, May 1910: 400–418. illus. AP2.C48, v. 58

Bibliography: p. 418.

1141

Griffith, Beatrice F. Historic stars &comets; an outline in pictures of the story of the heavens from the earliest records to the predicted return of Halley's Comet. Philadelphia, Majestic Press [1948] [80] p. illus. QB15.G7

Halley's Comet is featured in the following pictures:

7. Comet over Jerusalem, 66 A.D.

8. Comet in 141 A.D. shown over the building of the Roman Wall in the northern defenses of Britain.

9. Comet in 218 A.D. recorded in China.

11 & 12. Comet of 451 A.D. Attila at Chalons-sur-Marne in France.

22. Comet in 1066 A.D.

27. Comet in 1301 seen in September over Italy.

28. Comet in 1378, seen over England in late September.

29. Comet in 1456, observed over Constantinople.

31. Comet in 1607 recorded in many countries, including settlements in North America.

33. Comet in 1682 A.D. from a drawing by Hevelius, of Dantzig, at that time.

34. The first predicted return of Halley's Comet was discovered (by telescope) on Christmas Day, 1758, in Saxony.

1142

Griggs, H. W. Condensed facts about Halley's Comet. Scientific American, v. 102, Mar. 26, 1910: 258. illus. T1.S5, v. 102

Diagrams show the apparent path of the comet across the heavens. Oct. 1909–May 22, 1910; the inclination of its orbit to the orbital planes of Mercury, Venus, the earth, and Mars; and the orbits of the comet and the four inner planets with their positions marked for the period Jan.–Aug. 1910.

Reprinted in *Comets; Readings From Scientific American*, p. 14–15 (San Francisco, W. H. Freeman [1981] QB721.C65).

1143

Grimm, A. A. Halley's Comet. Washington, D.C., H. Kirkus Dugdale Co. [1911] 3 p. Mus

For voice and piano.

Cover design includes drawing of a comet.

1144

Grison, Georges. La crainte de la comète. Le Figaro, 56. année, 17 mai 1910: 4. N&CPR

See also his article "Soirée à Paris," signed with his pseudonym, Jean de Paris, in the issue of 19 mai, p. 4. It includes sections entitled "Les victimes de la comète," "À l'Aéro-Club de France," "La comète à l'étranger," and "Les yeux du poète."

1145

Groot, Herko. De komeet van Halley. *In his* Kometen en vallende sterren. Amsterdam, J. M. Meulenhoff [c1950] p. 49–60. illus., plate. QB721.G75

1146
Groueff, Stéphane, *and* Jean P. Cartier. L'étrange aventure de la comète de Halley. *In their* L'homme et le cosmos. Paris, Larousse [1975] (Collection Maîtrise du monde) p. 146–147. illus. QB28.G76
One of the two illustrations reproduces most of the 1759 engraving entitled "La Fameuse comète de 1682."

1147
Group organized to observe flight of Halley's comet. Industrial research & development, v. 24, Oct. 1982: 81–82. T175.I494, v. 24
About the International Halley Watch.

1148
Grover, Charles. [Halley's Comet] English mechanic and world of science, v. 90, Oct. 8, Dec. 3, 1909: 232, 419; v. 91, Mar. 11, Apr. 29–May 13, 1910: 125, 284–285, 310, 332. illus. T .E5, v. 90–91
Letters to the editor that include comments on the discovery of the comet, recollections of an old man of his acquaintance who had seen it in 1835, and observations made at the Rousdon Observatory, Lyme Regis, on Nov. 18, Mar. 3, Apr. 21, Apr. 20, 24, 25, 26, and 28 (with a sketch), and May 2 (with a corrected sketch).

1149
Grover, Charles. Halley's Comet, 1910 return. *In* British Astronomical Association, *London*. Journal, v. 16, July 1906: 353–354. illus.
QB1.B75, v. 16
Includes a small chart showing the comet's path, Jan.–Aug. 1910.

1150
Grover, Charles. Path of Halley's Comet, 1909–10. *In* British Astronomical Association, *London*. Journal, v. 19, July 1909: 394. illus.
QB1.B75, v. 19
Three charts, covering the period Sept. 12, 1909–June 23, 1910.

1151
[Grover, Frances] [Mae Tinee and the comet] Chicago Sunday tribune, v. 69, May 8, 1910, pt. 9: 1; May 15, pt. 9: 3; May 22, pt. 9: 6. illus.
N&CPR
Contents: She is simply scared speechless at thought of being struck or smothered by comet.—She still is "scairt" but just can't repent.—She is alive still but comet day was awful.

1152
Grün, Eberhard. Experimental studies of impact ionisation. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP–155) p. 81–90. illus.
NASA accession no. N81–34119.
References (25): p. 89–90.
Intended to establish the effects of impact ionization, the experiments simulated "the situation of the Halley probe when it will penetrate the cometary coma and when it will be exposed to cometary dust at an impact speed of 57 km/s."

1153
Grün, Eberhard, *and* Rüdeger Reinhard. Ion-electron pair production by the impacts of cometary neutrals and dust particles on the Halley probe shield. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP–155) p. 7–21. illus.

NASA accession no. N81–34114.

References (6): p. 20–21.

"It is argued that a thin Au-coating on the front sheet of the shield would reduce the number of ions produced by impacts of neutrals by several orders of magnitude."

1154
Grün, Eberhard, *and* James A. M. McDonnell. A particle impact detector for the Halley probe. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 17–21 illus.

NASA accession no. N80–22203.

References (40): p. 20–21.

1155
Gruning, Henry H. [Halley's Comet] English mechanic and world of science, v. 91, May 6, 1910: 310. T1.E5, v. 91

Letter to the editor reporting an observation made Apr. 29 at Ealing and describing the method by which he located the comet.

1156
Günther, Johann J. Populäre Betrachtung über die Kometen, mit Bezug auf die uns in diesem (1834) oder folgenden Jahre (1835) bevorstehende Erscheinung des sogenannten Halley'schen Kometen. Ein Schriftchen für Jeden lesbar. Cöln, Arend, 1834. 60 p.

Held by the British Library under shelfmark 8562. aa. 14.

1157
Günther, Johann J. Witterungslauf vor und während der letzten Erscheinung des Halleyschen Cometen, im Jahre 1759, wo er am 13. März seine Sonnennähe erreichte. Archiv für die gesammte Naturlehre, 26. Bd., 1. Heft 1834: 31–35. Q3.A6, v. 26

From an old manuscript left by an unidentified weather observer in Heidelberg.

1158
Guerrieri, Eugenio. Cometa di Halley 1909 c. Astronomische Nachrichten, Bd. 194, Nr. 4651, 7. Mai 1913: columns 321–328. QB1.A77, v. 194

Observations made Jan. 31–July 5, 1910, at the Capodimonte observatory in Naples.

1159
Guetner, Gottfried. Kurtz-gefassete Beschreibung des schönen liechten Comet-Sterns, welcher im Augustmonat dieses lauffenden 1682sten Jahres erschienen, und von männeglich gesehen worden, was für Eigenschafften er

an sich habe, und was von seiner Bedeutung unvergreifflich zu muthmassen. Altenburg, Gedruckt bey G. Richtern [1682] [16] p.

Held by the British Library under shelfmark 8560. bbb. 7. (13.).

1160

Guggenheim, Sigmund, *and* Emil Beck. Erdmagnetische Messungen in Zürich zur Zeit der Erdnähe des Halley'schen Kometen im Mai 1910. *In* Naturforschende Gesellschaft in Zürich. Vierteljahrsschrift, 55. Jahrg., Juli 1910: 229–232. illus. Q67.Z94, v. 55

1161

Guggenheim, Sigmund, *and* Emil Beck. Magnetische Aufzeichnungen beim Vorübergang des Halleyschen Kometen. Meteorologische Zeitschrift, Bd. 27, Dez. 1910: 554–555. illus. QC851.M3, v. 27

1162

Guillaume, Charles E. À propos de la comète de Halley. La Nature, 38. année, 26 fév. 1910: 205–206. Q2.N2, v. 38.1

Considers the earth's atmosphere and the effects that the comet's tail might have on it.

Extracts in English translation appear under the title "The Comet's Intentions" in the *Literary Digest*, v. 40, Apr. 9, 1910, p. 693 (AP2.L58, v. 40).

1163

Guillaume, Charles E. A propos de la comète de Halley. *In* Société française de physique, *Paris*. Bulletin des séances, année 1910, 4. fasc.: 62. QC1.S6, 1910

Summary of a paper presented June 17 on the failure of scientific observations to detect any change in the atmosphere at the time of the earth's passage through the comet's tail. A shortened version appears in *Revue générale des sciences*, 21. année, 30 juil. 1910, p. 624 (Q2.R49, v. 21).

1164

Guillaume, Charles E. À propos de la comète de Halley: peut-on capter les gaz de la comète? *In* Société astronomique de France. Bulletin, 24. année, avril 1910: 188–189. QB1.S6, v. 24

See also *Nature*, v. 83, Mar. 24, 1910, p. 108 (Q1.N2, v. 83), reporting a suggestion by Dr. F. J. Allen that an attempt "be made to collect some of the cometary dust" which may enter our atmosphere when the earth passes through the comet's tail.

1165

Guillemin, Amédée V. La comète de Halley. *In his* Les comètes. Paris, Librairie Hachette, 1875. p. 87–95. illus., plate. 4/QB-237

Illustrations relating to the comet appear on p. 22, 23, 93, and 220. Plate VIII, "La comète de Halley en 1835," reproducing sketches by Sir John Herschel, faces p. 220. Additional references to the comet are scattered throughout the volume, which has a detailed table of contents but no index.

An English translation by James Glaisher of Guillemin's book, *The World of Comets* (London, S. Low, Marston, Searle, & Rivington, 1877.

QB721.G95), contains a chapter entitled "Halley's Comet" on p. 100–108. The text illustrations appear on p. 24, 25, 106, and 250; the plate with Herschel's drawings was not included.

1166
Gulbransson, Olaf. [Der Komet kommt!] Simplicissimus, 15. Jahrg., 4. Apr. 1910: 3. col. illus. AP105.S5, v. 15

Cartoon shows the Berlin chief of police, who had lately suppressed public demonstrations with excessive force, pointing a minatory finger at the comet and announcing that the Milky Way—"Milk Street" in German—is for the use of traffic only. Reproduced with English caption in the *Literary Digest*, v. 40, May 7, 1910, p. 913 (AP2.L58, v. 40).

1167
Gundel, Wilhelm. Verzeichnis der im Altertum erwähnten K[ometen] *In* Paulys Real-Encyclopädie der classischen Altertumswissenschaft. Neue Bearbeitung. 11. Bd. Stuttgart, J. B. Metzlersche Verlagsbuchhandlung, 1922. columns 1182–1193. DE5.P33, v. 11

Chronological listing of comets that appeared during classical antiquity, with references to reliable contemporary sources. The comets of 163, 87, and 11 B.C., and A.D. 69, 141, 218, 375, 451, and 530 are identified as possible or probable appearances of Halley's Comet.

1168
Guppy, Robert J. Lechmere. Appearance presented by the sun during the transit of Halley's Comet, May 18th, 1910. Knowledge, new ser., v. 7, Aug. 1910: 308. Q1.K7, n.s., v. 7

Letter to the editor describing an observation made at Barbados about an hour before sunset.

1169
Guth, Vladimir. Remark on a cosmic-probe investigation of meteor showers with retrograde motion. *In* Meteor orbits and dust; the proceedings of a symposium ... held August 9–13, 1965, at Cambridge, Mass. Edited by Gerald S. Hawkins. Washington, Scientific and Technical Information Division, Office of Technology Utilization, National Aeronautics and Space Administration, 1967. (Smithsonian contributions to astrophysics, v. 11) p. 119–120. illus. QB461.S6, v. 11

Proposes the launch of a probe to measure dust in parts of the orbit preceding and following Halley's Comet during its 1986 return, to "elucidate some processes of disintegration of comets."

1170
Guthnick, Paul. Die gegenwärtige Erscheinung des Halleyschen Kometen. Die Woche, 12. Jahrg., 28. Mai 1910: 899–901. Micro 27817

1171
Gutiérrez, Miguel. Sobre el paso de la tierra por la órbita del cometa de Halley. *In* Sociedad Astronómica de España. Revista, año 1, jul. de 1911: 56–57. QB1.U65, v. 1

1172

Gutiérrez Lanza, Mariano. El cometa Halley. *In* Academia de ciencias médicas, físicas y naturales de la Habana. Anales, t. 46, feb. 1910: 468–484. Q29.H11, v. 46

Presented at the session of Feb. 26, 1910.

1173

[Haack, Hermann] Der Halleysche Komet. Geographischer Anzeiger, 11. Jahrg., Heft 4, 1910: 87–88. fold. plate. G1.G39, v. 11

Based on "Die Rückkehr des Halleyschen Kometen," published in the *Illustrirte Zeitung* of Feb. 10, 1910. The plate showing the path of the comet in the sky, bound at the end of the issue, is copied from *Das Weltall* of Feb. 1.

1174

Hagemann, W., *and* Julius Schünemann. Luftelektrische Messungen am 18. und 19. Mai 1910. Meteorologische Zeitschrift, Bd. 28, Jan. 1911: 41–43. illus. QC851.M3, v. 28

1175

Hagen, John G. Die Fabel von der Kometenbulle. Stimmen aus Maria-Laach, 78. Bd., Apr. 1910: 413–429. AP30.S7, v. 78

Bibliographic footnotes.

1175a

Hahn, Hermann M. Komet im Anflug. Bild der Wissenschaft, 20. Jahrg., Juni 1983: 12–13. illus. Q3.B55, v. 20

News of the approaching comet, which had just crossed Saturn's orbit.

1176

Hajduk, Anton. The core of the meteor stream associated with Comet Halley. *In* Solid particles in the solar system. Symposium no. 90, organized by the IAU in cooperation with COSPAR, held at Ottawa, Canada, August 27–30, 1979. Edited by Ian Halliday and Bruce A. McIntosh. Dordrecht, Holland, Boston, D. Reidel Pub. Co. [1980] (International Astronomical Union. Symposium no. 90) p. 149–152. illus. QB790.S64

References (16): p. 152.

"Data on 240,000 meteor echoes recorded in 1958–1967 with the Springhill Meteor Radar, have been used for determining the structural features of the Eta Aquarid stream. A zone with a distinct enhancement in meteor rates was located at solar longitudes of 43° to 47°. The core of the stream, corresponding to the four peak days, extends from the orbit of the comet to a distance of 0.08 A.U. Other observations, from both hemispheres, support these results."

1177

Hajduk, Anton, *and* G. Cevolani. Simultaneous radar meteor observations at Ondřejov and Budrio. Bulletin of the astronomical institutes of Czechoslovakia, v. 32, no. 5, 1981: 304–310. illus. QB1.B5, v. 32

Reference (14): p. 310.

Pointing out that Comet Halley's approaching perihelion passage increases the importance of observations of the meteor showers connected with it—the Orionids and the Eta Aquarids—the authors describe radar observations carried out simultaneously in Czechoslovakia and Italy during the Orionid shower period in October 1978. These "were used to obtain the variation of shower activity. The resulting peak rate is placed at $\lambda \odot = 208.1 \pm 0.3$. A rapid increase of meteor activity, exceeding the shower peak rate, was found at $\lambda \odot = 214.6$ and is ascribed to a filament of the stream."

1178
Hajduk, Anton. The structure of meteor streams associated with Comet Halley: Eta Aquarids and Orionids. *In* Asteroids, comets, meteoric matter; [papers presented at the 22d IAU colloquium held in Nice, April 4–6, 1972] Edited by Cornelia Cristescu, W. J. Klepczynski [and] B. Milet. [Bucureşti] Editura Academiei Republicii Socialiste România, 1974. p. [309]–311. QB651.A87

References (5): p. 311.

1179
Hajduk, Anton. The structure of the Eta Aquarid meteor stream. Bulletin of the astronomical institutes of Czechoslovakia, v. 24, no. 1, 1973: 9–13. illus. QB1.B5, v. 24

References (21): p. 12–13.

"The observed displacement of the maxima in solar longitude, the size distribution of particles and other characteristics appear to be in agreement with the concept of a common origin of the Eta Aquarid and Orionid streams in Comet Halley."

1180
Hajduk, Anton. Structure of the meteor stream associated with Comet Halley. Bulletin of the astronomical institutes of Czechoslovakia, v. 21, no. 1, 1970: 37–45. QB1.B5, v. 21

References (40): p. 44–45.

1181
Hajduk, Anton. The total mass and structure of the meteor stream associated with Comet Halley. *In* European Regional Meeting in Astronomy, *6th, Dubrovnik, 1981.* Sun and planetary system. Proceedings of the sixth European Regional Meeting in Astronomy, held in Dubrovnik, Yugoslavia, 19–23 October 1981. Edited by W. Fricke and G. Teleki. Dordrecht, Holland, Boston, D. Reidel Pub. Co. [1982] (Astrophysics and space science library, v. 96) p. 335–336. QB1.E86 1981

References (11): p. 336.

Finding that the calculated total mass of the meteor stream is eight times the estimated present mass of the comet, implying a lifetime ten times what would be expected, the author concludes that probably "Comet Halley was originally an exceptionally large object, with a much higher dust production than at present."

1182
Hall, Maxwell. Halley's Comet 1910. Popular astronomy, v. 27, May 1919: 281–287. illus. QB1.P8, v. 27

Discusses observations made in Jamaica, May 13–22, 1910.

1183
Hall, Maxwell. Halley's Comet, 1910: observations made in Jamaica. *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 615–617.
QB1.R7, v. 70

Describes observations made May 6–22.

1184
Hall, Roger. An astrological discourse, of the late comet, which appeared August the 18th 1682. With a judgment on its prodigious effects. Dublin, Printed by J. Ray on Colledge-Green, for E. Dobson on Cork Hill, 1682. 4 leaves.

Cited by William Carew Hazlitt in his *Bibliographical Collections and Notes on Early English Literature, 1474–1700*, 2d ser., p. 266 (London, B. Quaritch, 1882. Z2012.H32 1882).

1185
Halley, Edmond. Astronomiae cometicae synopsis. *In* Royal Society of London. Philosophical transactions, v. 24, Mar. 1705: 1882–1899.
Q41.L8, v. 24 Rare Bk. Coll.

Reprinted in David Gregory's *Astronomiae physicae & geometricae elementa*, 2. ed. rev. & corr., t. 2, appendix, p. 3–20 (Genevae, Apud M.-M. Bousquet, M. DCC. XXVI. QB42.G78 1726, v. 2 Rare Bk. Coll.).

A separately published English translation, *A Synopsis of the Astronomy of Comets* (London, 1705. 24 p.), is held by the British Library under shelfmark 532. e. 7., and by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. Ci. 329.

"A Synopsis of the Astronomy of Comets" is also found in v. 2, p. [881]–905, of the English version of Gregory's work, revised by Edmund Stone, *The Elements of Physical and Geometrical Astronomy* (London, Printed for D. Midwinter, 1726. QB42.G8, v. 2 Rare Bk. Coll.).

1186
Halley, Edmond. Astronomical tables with precepts both in English and Latin for computing the places of the sun, moon, planets, and comets. London, Printed for W. Innys in Pater-noster Row, MDCCLII. [385] p.
QB11.H2 Rare Bk. Coll.

"A Synopsis of the astronomy of comets": p. [36]–[58]
"Synopsis astronomiae cometicae": p. [259]–[295]

Tables accompany the Latin version only. The text is considerably expanded by comparison with that published in the *Philosophical Transactions* of Mar. 1705.

A review of the Latin version, first published separately in 1749, appears in Maty's *Journal britannique*, t. 1, mars 1750, p. 29–50 (AP25.J6, v. 1).

1187
Halley, Edmond. A discussion of elliptical orbits of comets. *In* Shapley, Harlow, *and* Helen E. Howarth. A source book in astronomy. New York, McGraw-Hill Book Co., 1929. (Source books in the history of the sciences) p. 94–96. illus.
QB3.S5

"From 'A Synopsis of the Astronomy of Comets,' in Gregory's 'The Elements of Astronomy,' Vol. 2, 1715." This is the passage in which Halley predicts the return in 1758 of the comet of 1682.

The same text, with modernized spelling and punctuation, appears under the title "Return of a Comet Predicted" on p. 204–206 of *The Autobiography of Science* (New York, Doubleday, Doran, 1945. Q111.M6), edited by Forest Ray Moulton and Justus J. Schifferes. Under the title "I Venture To Foretell" it can also be found in *Science Digest*, v. 26, Nov. 1949, p. 90–91 (Q1.S383, v. 26).

1188

Halley, Edmond. Halley's account of his investigations on the orbits of comets. *In* Royal Astronomical Society of Canada. Journal, v. 3, Nov./Dec. 1909: 438–445. QB1.R485, v. 3

Taken from v. 4 of Baddam's abridgment of the *Philosophical Transactions* of the Royal Society of London. Reprinted as "Halley's Cometary Studies" in *Scientific American Supplement*, v. 69, Feb. 26, 1910, p. 143–144 (T1.S52, v. 69), which in turn is reprinted in *Comets; Readings From Scientific American*, p. 24–26 (QB721.C65).

1189

Halley, Edmond. Letter, 1695 Sept. 28, London, to Isaac Newton. *In his* Correspondence and papers. Arranged and edited by Eugene Fairfield MacPike. Oxford, At the Clarendon Press, 1932. (History of Science Society. Publications, new ser., 2) p. 91–92. QB36.H25A3

"I must entreat you to procure for me of Mr. Flamsteed what he has observed of the Comett of 1682 particularly in the month of September, for I am more and more confirmed that we have seen that Comett now three times, since ye Yeare 1531 ..."

Halley mentions his work on this comet in several subsequent letters to Newton: Oct. 15 and 21, 1695 (p. 95–96), and early 1696 (p, 96–97). The originals are in the collections of the Cambridge University Library.

1190

Halley, Edmond. Tables astronomiques de M. Halley, pour les planètes et les comètes, réduites au nouveau stile & au méridien de Paris, augmentées de plusieurs tables nouvelles de différens auteurs... Et l'histoire de la comète de 1759. Par M. Delalande. Paris, Chez Durand, 1759. 168, 200 p. fold. plate. ICJ; MA; MiU; NNC; OGK; PBa

An analytical review appears in *Histoire de l'Académie royale des sciences, année M. DCCLIX*, p. 189–200 (A Paris, De l'Impr. royale, M. DCCLXV. Q46.A13, 1759).

1191

Halley and his comet. *In* The Book of popular science. Edited by Dexter S. Kimball. v. 15. New York, Grolier Society [1931] p. 5159–5168. illus., facsims., port. Q162.B68 1931, v. 15

1192

Halley and his comet. Scientific American, v. 95, Aug. 4, 1906: 87. T1.S5, v. 95

1193

Halley and his comet. United service journal, Oct. 1835: 158–168. U1.U6, 1835

Much of the article deals with Halley's treatment of Flamsteed, quoting from the latter's manuscripts which had come to light a few years earlier.

See also the short note, "Halley's Comet," in the Sept. 1835 issue, p. 144.

1194
Halley and Newton on the comet expected in 1758. Gentleman's magazine, v. 26, Jan. 1756: 24–27. AP4.G3, v. 26 Rare Bk. Coll.

"Candidus" submits excerpts from the writings of the two scientists that relate "to the periodic return of comets, and their near appulse to the earth." The extracts concern the comet of 1680 (Newton's) as well as that of 1682 (Halley's).

Reprinted in the *Scots Magazine*, v. 19, Sept. 1757, p. 469–474 (AP3.S35, v. 19).

1195
Halley and the discovery of his comet. American review of reviews, v. 41, Apr. 1910: 486–487. port. AP2.R4, v. 41

1196
Halley Fund announced at shuttle liftoff. Astronomy, v. 9, July 1981: 56–57. QB1.A7998, v. 9

Van R. Kane announces the formation of the Halley Fund, to collect money from private individuals and organizations wishing to support a U.S. mission to study the comet.

1197
Die Halley-Kometen-Medaille. Das Weltall, 10. Jahrg., 15. Juli 1910: 306a. illus. QB1.W4, v. 10

Advertisement fully describing the medal issued by the Treptow Observatory. The medal's availability is noted in *Die Welt der Technik*, 72. Jahrg., 15. Aug. 1910, p. 318 (T3.W4, v. 72).

1198
Halley meteors. Nature, v. 84, Oct. 6, 1910: 439. Q1.N2, v. 84

Quotes a letter to Dr. W. J. S. Lockyer from Prof. David Todd of the Amherst College Observatory, urging observation of possible Halley meteors in mid-October, and a report published in the *Daily Mail* of a very brilliant meteor seen in Johannesburg on Oct. 3.

1199
Halley mission discussion planned. Aviation week & space technology, v. 114, Mar. 2, 1981: 22. TL501.A8, v. 114

"Representatives of the three separate Halley's Comet missions are expected to discuss potential mission coordination and informational exchanges to maximize the scientific data returned from their individual flybys."

1200
Halley' üstököscsillagáról. Az Időjárás, 14. évf., 1910. feb.: 79. DAS

1201
[Halley-üstököse] Az Időjárás, 14. évf., 1910. jun.: 202–206. DAS

Letters to the editor of varying length, reporting observations of the comet, from:
Ödön Mergl, Pozsony (p. 202);
János S. Caba, Kurtya, Krassó-Szörény County (p. 202);
Károly Polikeit, Pozsony (p. 203);
Gyula Rhé, Jutas, Veszprém County (p. 203–204);
Vilmos Dani Lenkei, Budapest (p. 204);
Gyula Borcsányi, Dévény (p. 204–205);
Oszkár Ungár, Budapest (p. 205);
János A. Horváth, Igló (p. 205);
Ignácz Baumgartner, Tarcsafürdő, Vas County (p. 206);
Elemér Győry, Rafna, Krassó-Szörény County (p. 206);
Károly Hiesz, Dunaharaszti (p. 206);
Gyula Kelemen, Székesfehérvár (p. 206), and
Gyula Schurger, Szeged (p. 206).

1202
Halleyev komet. Dom in svet, letnik 23, [jan.] 1910: 46–47.
AP58.S55D6, v. 23

A sketch of the comet made by Herschel on Jan. 28, 1836, is reproduced on p. 23 of this issue, and a full-page drawing of the night sky over a rural landscape with the comet as it would be placed on May 25 appears on p. 220 of the maj issue.

1203
[Halley's Comet] America, v. 1, Sept. 18, Oct. 2–9, 1909: 632, 682, 707; v. 2, Oct. 23, Nov. 20, Dec. 11, 1909, Jan. 15, Jan. 29, Mar. 5, Apr. 2, 1910: 49, 159, 240, 375, 433, 571, 681; v. 3, May 7, May 21, June 4–11, July 2, July 23, Aug. 27: 110, 165, 216, 243, 319, 400, 521. BX801.A5, v. 1–3

A series of short untitled news notes in the "Science" column. The last three are signed by Father Rigge.

1204
Halley's Comet. American journal of science and arts, v. 29, no. 1, 1836: 155–156. Q1.A5, v. 29

1205
Halley's Comet. American magazine of useful and entertaining knowledge, v. 1, July 1835: 493. AP2.A366, v. 1 Rare Bk. Coll.

See also the articles entitled "Comets" in the Mar. 1835 issue, p. 282, and in v. 3, Mar. 1836, p. 225–226.

1206
Halley's Comet. Army and Navy chronicle, v. 1, Aug. 27, 1835: 280.
U1.A6, v. 1

Extract from a letter from Mr. Rogerson of the Royal Observatory, Greenwich, to the Rev. H. Beech, Bristol, copied from the *Plymouth Gazette* of June 13.

A very similar item, entitled "The Comet" and attributed to the *Bristol Gazette* of June 13, appears in *Niles' Weekly Register*, v. 49, Sept. 12, 1835, p. 20 (JK1.N5, v. 49).

1207
Halley's Comet. *In* Astronomical Society of Wales, *Cardiff*. Cambrian natural observer, v. 11, Jan. 1910: 190–193. QB1.A45, v. 11

Quotes an English translation by Dorothy Taylor of some lines from Victor Hugo, and a poem by the Rev. W. E. Winks.

1208
Halley's Comet. *In* Astronomical Society of Wales, *Cardiff*. Cambrian natural observer. 3d ser., v. 1; 1910. Cardiff, Printed by Evans & Williams, 1911. p. 9–13. plate. QB1.A45, 1910

Notes of varying length describing observations made by members of the society and other correspondents. The plate reproduces a sketch made by Mark B. Heath, who observed the comet with an 8-inch equatorial telescope at the Adelaide Observatory, South Australia, on Jan. 1.

1209
Halley's Comet. Athenaeum, Aug. 15, 1835: 624. AP4.A8, 1835

Letter to the editor, signed J. G., with a table showing where to look for the comet during the period Aug. 15–Sept. 24. Excerpts from Dr. "Lihemann's" ephemeris appear in the issues of Aug. 22 (p. 650) and Aug. 29 (p. 668).

1210
[Halley's Comet] Athenaeum, Sept. 18–Oct. 16, Oct. 30–Dec. 25, 1909: 336, 368, 399–400, 430, 467, 530, 562, 596, 628–629, 665, 701, 736, 768, 794; Jan. 8–15, Feb. 5, Feb. 19, Mar. 12, Apr. 2, Apr. 16–June 18, 1910: 46, 75, 161–162, 221–222, 313, 403, 467, 498, 529, 559, 586, 588, 614, 646, 678, 708–709, 711, 738. AP4.A8, 1909–10

A series of brief news reports, chiefly in the periodical's "Science Gossip" column but occasionally in its "Research Notes" section.

1211
Halley's Comet. *In* The British almanac of the Society for the Diffusion of Useful Knowledge for the year 1835. London, C. Knight [1834?] The companion to the almanac, p. [5]–15. AY754.B6, 1835

A note on Halley's Comet, by J. W. Lubbock, appears on p. 263 of the *Companion*, and another (unsigned) on p. 10 of the *Almanac*.

Excerpts from the main article, together with a letter from Sir James South stating that he had seen the comet on Aug. 23 and 24, appear in the *Nautical Magazine*, v. 4, Sept. 1835, p. 564–565 (V1.N25, v. 4).

1212
[Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 17, Feb. 1907: 197–198; v. 18, July 1908: 390; v. 19, Nov.–Dec. 1908, Apr.–May, July 1909: 42, 99–101, 259, 314, 408–409; v. 20, Oct. 1909–June 1910: 51–52, 104–105, 158–160, 214–215, 273, 325–326, 387–390, 442–448, 453, 498–508, 514–515; v. 21, Oct. 1910–Apr. 1911: 51–55, 120–125, 164–165, 203, 244, 280, 333; v. 22, Jan. 1912: 204–205. illus. QB1.B75, v. 17–22

News items of varying length, nearly all in the "Comet Notes" section, which beginning in Feb. 1910 was attributed to A. C. D. Crommelin. Some include ephemerides; some present summaries of reports published elsewhere, and some provide information received by letter. Portions of some of the more extensive columns are separately listed in this bibliography.

1213
Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 19, Oct. 1909: 456. QB1.B75, v. 19

Congratulates Cowell and Crommelin for the accuracy of their computation of the orbit and notes that after the announcement of Wolf's discovery, "faint indications of the comet were found" on plates taken at Greenwich on Sept. 9. Gives the orbit elements according to the latest findings.

1214
Halley's Comet. Chinese repository, v. 4, Oct. 1835: 296. DS701.C7, v. 4

Notes the report of an observation published in the *Canton Press* of Oct. 17.

1215
[Halley's Comet] East & west, v. 9, June 1910: 579. AP8.E2, v. 9

The reappearance of the comet seems to have caused no alarm among the people of India and Burma.

1216
Halley's Comet. Edinburgh review, v. 209, Apr. 1909: 290–307. Micro 32977

1217
Halley's Comet. Educational record of the Province of Quebec, v. 30, Jan. 1910: 18–20. L11.E47, v. 30

From the *Practical Teacher*.

1218
Halley's Comet, by "Omicron." English mechanic and mirror of science and art, v. 11, Apr. 8–22, 1870: 50–51, 77–78, 100–101. illus. T1.E5, v. 11

1219
Halley's Comet. English mechanic and world of science, v. 27, Mar. 29, 1878: 70–71. T1.E5, v. 27

Article on the comet's orbit and recorded appearances, signed W. C. E.

1220
[Halley's Comet] English mechanic and world of science, v. 90, Jan. 14, 1910: 560; v. 91, Feb. 4: 11. illus. T1.E5, v. 90–91

Letters to the editor signed "M.I.C.E." The first accompanies a diagram showing "the relative apparent positions of Mars, Saturn, and Halley's Comet on the nights of January 14 to 28," and the second reports observations made Jan. 29–30 at Sandown on the Isle of Wight.

1221
Halley's Comet. English mechanic and world of science, v. 90, Jan. 28, 1910: 611. T1.E5, v. 90

Letter to the editor signed "Alcor" reporting observations made Jan. 11–12 at Sheffield.

1222
Halley's Comet. English mechanic and world of science, v. 91, Feb. 25, 1910: 82. T1.E5, v. 91

Letter to the editor signed A. A. C. reporting an observation made Feb. 11.

1223
Halley's Comet. English mechanic and world of science, v. 91, Apr. 15, 1910: 243. T1.E5, v. 91

Letter to the editor signed R. P. suggesting that observers keep a watch on the moon during the earth's passage through the comet's tail, "for any possible phenomena that may occur."

1224
[Halley's Comet] English mechanic and world of science, v. 91, May 13, 27, 1910: 332, 378. T1.E5, v. 91

Letters to the editor signed "Sarnian" describing observations made from Guernsey on Apr. 27, Apr. 30, and May 9, and May 21 and 23.

1225
[Halley's Comet] English mechanic and world of science, v. 91, May 27, 1910: 378. T1.E5, v. 91

Letter to the editor signed F. R. Met. Soc. briefly reports Halley's Comet, observed May 22 at Tunbridge Wells, as "altogether a disappointing object."

1226
[Halley's Comet] English mechanic and world of science, v. 91, May 27, 1910: 378. T1.E5, v. 91

Letter to the editor signed Ras Algethi reporting observations made May [illegible]2 and 23.

1227
[Halley's Comet] English mechanic and world of science, v. 91, June 10, 1910: 424. T1.E5, v. 91

Letter to the editor signed "Copernicus" reporting a naked-eye observation June 3 at Bognor.

1228
Halley's Comet. English mechanic and world of science, v. 91, June 17, 1910: 450. T1.E5, v. 91

Letter to the editor signed E. H. reporting the brilliance of the comet as seen in New York on May 1[illegible] and 15.

1229
[Halley's Comet] English mechanic and world of science, v. 91, July 8, 1910: 521–522. T1.E5, v. 91

Letter to the editor signed "Gunner" describing his observations of the comet made at Poona during May.

1230
Halley's Comet. Family magazine, v. 3, [Sept. 1835]: 157–158.
AP2.F184, v. 3

1231
[Halley's Comet] Foreign quarterly review, v. 15, June 1835: 477–481.
AP4.F69, v. 15

Presents information derived from publications on the comet by J. W. Fischer, Littrow, and Möbius.

Summaries appear in the *Mirror of Literature, Amusement, and Instruction*, v. 26, July 25, 1835, p. 63–64 (AP4.M5, v. 26), and the *London Journal of Arts and Sciences*, conjoined ser., v. 7, [Dec.] 1835, p. 253–255 (T1.N5, s. 3, v. 7).

1232
Halley's Comet. Gentleman's magazine, new ser., v. 4, Oct. 1835: 416.
AP4.G3, n.s., v. 4

On the discovery, subsequent observations, and expected path and visibility of the comet.

1232a
Halley's Comet. Gospel messenger, v. 49, May 14, 1910: 308.
BX7801.G6, v. 49

A compilation of facts.

1233
Halley's Comet. Humanitarian review, v. 8, May 1910: 654–657.
BL2700.H8, v. 8

See also Edgar L. Larkin's article, "Comets Galore," in the April issue (p. 558–560), which is chiefly about Halley's Comet.

1234
Halley's Comet. Knowledge & scientific news, new ser., v. 6, Jan. 1909: 27.
Q1.K7, n.s., v. 6

Letter to the editor from "Canadian Subscriber" asking for information on the apparent path of the comet among the stars and an estimate of the time when it will become visible, first, in small telescopes, and later, to the naked eye.

1235
Halley's Comet. Knowledge & scientific news, new ser., v. 7, Feb. 1910: 59. illus.
Q1.K7, n.s., v. 7

Reproduces a copy of the recovery photograph, presented by Prof. Wolf to Mrs. Periam Hawkins.

1236
Halley's Comet Knowledge, new ser., v. 7, May 1910: 192.
Q1.K7, n.s., v. 7

"By an F.R.A.S."

News note with an ephemeris (May 6–30).

1237
[Halley's Comet] *In* Lardner, Dionysius, *ed.* The museum of science & art. v. 11. London, Walton and Maberly, 1856. p. 161, 175–183, 193, 196, 198–208. illus. Q171.L297, v. 11

Reproduces drawings by Struve, Maclear, and Smyth that show the comet's appearance on Sept. 29, Oct. 3, 8, 9, 10, 12, 14, and 29, and Nov. 5, 1835, and Jan. 24, 25, 26, 27, 28, and 30, and Feb. 1, 7, 10, 16, and 23, 1836.

1238
Halley's Comet. Literary digest, v. 40, Mar. 5, 1910: 430. illus. AP2.L58, v. 40

Cartoon from *Pasquino* (Turin). Against a background of men gazing at the comet through telescopes, the German Emperor frowns and says, "The end of the world? Impossible! I have given no such order."

1239
Halley's Comet. London journal of arts and sciences, conjoined ser., v. 7, [Sept.] 1835: 52–54. T1.N5, s. 3, v. 7

Presents a report from the *Allgemeine Zeitung* on the first sighting of the comet in Rome on Aug. 5 and two messages to the English newspapers from Sir James South announcing his observations on Aug. 22 and 23. These items also appeared in the *Times* (London), Aug. 24, 1835, p. 3 (N&CPR).

1240
Halley's Comet. London journal of arts and sciences, conjoined ser., v. 8, [Mar.] 1836: 61–62. T1.N5, s. 3, v. 8

Reports observations made by Müller at Geneva on Dec. 31, 1835 (copied from the *Times* of Jan. 20, 1836, p. 1), and by the Rev. W. R. Dawes at Ormskirk on Jan. 16 and 19, 1836.

1241
Halley's Comet. Los Angeles times, v. 93, Jan. 6, 1974, pt. 6: 2. N&CPR

Letters to the editor from two readers who saw the comet in 1910, one in Costa Rica and the other in Cleveland, Ohio, provide their recollections.

1242
Halley's Comet. Mechanics' magazine, v. 23, Apr. 25, 1835: 64. T1.I38, v. 23

A Dutch paper reports that, according to a letter from Vienna, Littrow received word from Herschel at the Cape declaring that the comet would not be visible because the direction of its course had changed.

Also published in the *Times* (London), Apr. 23, 1835, p. 5 (N&CPR), *Algemeene konst- en letterbode*, 1. mei 1835, p. 289 (AP15.A5, 1835), and *Giornale di scienze, lettere, e arti per la Sicilia*, v. 50, giugno 1835, p. 333.

1242a
Halley's Comet. Meerut universal magazine, v. 1, Sept. 1835: 338. AP8.M4, v. 1

An unsigned letter to the editor reporting the position and tail length of the comet as observed Oct. 12–17.

1243
Halley's Comet. Mirror of literature, amusement, and instruction, v. 26, Sept. 19, 1835: 183–184. AP4.M5, v. 26

Reprints a notice datelined Gosport Observatory, Sept. 2, from the *Hampshire Chronicle*, and Professor Airy's report published in the *Cambridge Chronicle*.

Both items also appeared in the *Times* (London), Sept. 11, 1835, p. 5 (N&CPR).

1244
[Halley's Comet] Nature, v. 78, July 2, July 23, Oct. 15, 1908: 207, 281, 612; v. 79, Nov. 26, 1908, Jan. 14, 1909: 108, 320; v. 80, Apr. 22–29: 228–229, 259–260; v. 81, July 8, Sept. 16–Oct. 14, Oct. 28: 46, 355, 376, 404–405, 436, 465, 528–529; v. 82, Nov. 4, 1909–Jan. 27, Feb. 10, Feb. 24, 1910: 19, 46–47, 77, 107, 140, 165–166, 201–202, 227, 259, 292, 319–320, 348–349, 378, 440, 499; v. 83, Mar. 3–Apr. 14, Apr. 28–May 19, June 9, June 30: 20, 46, 79, 108–109, 140, 169, 201, 259–260, 290–291, 320, 348–349, 439, 534; v. 84, July 7–Aug. 11, Sept. 22–29, Oct. 13: 19, 52, 86, 120, 152, 183–184, 374, 404, 472; v. 85, Nov. 3–10, Dec. 8, 1910, Feb. 9, 1911: 21–22, 51, 180, 486; v. 86, Mar. 2–16, Apr. 6–13, Apr. 27–May 4, May 25, June 1–8: 24, 54–55, 91, 191, 223, 292, 322–323, 426, 460, 495; v. 87, July 13–20: 56, 91; v. 88, Jan. 25, 1912: 423; v. 89, Apr. 11, Aug. 22: 147, 644. illus. Q1.N2, v. 78–89

News notes under a variety of headings in "Our Astronomical Column," often featuring English summaries of material in foreign journals. The report in v. 82, Jan. 13, 1910, p. 319–320, is reprinted in *Scientific American*, v. 102, Feb. 19, 1910, p. 162 (T1.S5, v. 102).

1245
Halley's Comet. Nature, v. 83, Apr. 21, 1910: 223–225. illus. Q1.N2, v. 83

Includes an ephemeris for Apr. 24–May 30 from *Astronomische Nachrichten*, Nr. 4379, diagrams showing the comet's path for roughly the same period, a photograph taken Feb. 10 at Ottawa, a drawing made Mar. 5 in France, general comments on the comet's observability in England, and miscellaneous reports.

1246
Halley's Comet. Nature, v. 84, Sept. 8, 1910: 322–323. Q1.N2, v. 84

Extracts of "a few of the more important results" from a "large number of publications dealing with observations" of the comet.

1247
Halley's Comet. Nature, v. 85, Jan. 12, 1911: 349–351. illus. Q1.N2, v. 85

Extended summary of findings published in Transvaal Observatory Circular no. 4. Observations from Utrecht and Algiers, published in *Astronomische Nachrichten*, Nr. 4453, Mascart's reports in several journals, and other items are also noted.

1248
Halley's Comet. New South Wales magazine, May 1843: 203–207.

Provides "a short retrospect of its history" and points out "the very near agreement in the time of its predicted and actual return in 1835."

1249
Halley's Comet. Popular astronomy, v. 16, Oct. 1908: 522–523; v. 17, Nov.–Dec. 1909: 590–591, 644–645; v. 18, Feb., May–June/July 1910: 115, 305, 369. QB1.P8, v. 16–18

General news and comment. The first article reprints a story from the *Detroit News*, the second tells of examining one of Barnard's early photographs of the comet at Yerkes Observatory, the third includes reports of observations made at Goodsell Observatory on Nov. 5 and 18, the fourth mentions sightings made with small telescopes during December, the fifth includes a report of an observation made at Goodsell on Apr. 20, and the last reports the comet's appearance at the time of its nearest approach to the earth (May 15–22) and quotes from Barnard's letters describing observations made at Yerkes on May 15 and 18.

1250
Halley's Comet. Printing machine, v. 3, May 30, 1835: 355–357. AP4.P85, v. 3

Includes data on earlier appearances from the works of Lubieniecki and Riccioli.

1251
Halley's Comet. Records of general science, v. 3, Apr. 1836: 316–318. Q1.R27, v. 3

Notes reports of its first observation in various localities, comments on its later visibility to the naked eye and the length of its tail, discusses calculations of its perihelion date, and offers answers to the query, "have any new phenomena been observed, or has any additional information been acquired" during the comet's visit?

1252
Halley's Comet. Saturday magazine, v. 7, Nov. 7, 1835: 180–181. AP4.S25, v. 7

Signed J. E. R.

1253
Halley's Comet. Scientific American, v. 102, Apr. 23, 1910: 334. T1.S5, v. 102

Brief report on its disappointing faintness.

1254
Halley's Comet. Scientific American, v. 103, Dec. 31, 1910: 518. T1.S5, v. 103

Brief note on Barnard's observations made Nov. 11 and Dec. 11 and 13, when the comet had a diameter of 15″ and was of about the 12th magnitude.

1255
Halley's Comet. *In* Sky and telescope. Neighbors of the earth; planets, comets, and the debris of space. Edited by Thornton Page & Lou Williams Page. New York, Macmillan Co. [1965] (Sky and telescope library of astronomy, v. 2) p. 169–[170] illus. QB601.S6

Another illustration appears on p. [171]. Originally published in *Telescope*, v. 3, July/Aug. 1936, p. 81 (QB1.T42, v. 3).

The succeeding essay, "Second Astronomer Royal: Edmond Halley," by Ralph S. Bates (p. [171]–175), includes the story of Halley's investigation of comet orbits and his famous prediction, as well as a list of 27 past appearances of Halley's Comet. This article was first published in *Sky and Telescope*, v. 1, Mar. 1942, p. 7–9 (QB1.S536, v. 1).

1256

Halley's Comet. Sky and telescope, v. 54, Nov. 1977: 363–364. QB1.S536, v. 54

Includes a report on Yeomans' new calculation of the comet's orbit and proposals for a spacecraft rendezvous made by NASA's Comet Halley Science Working Group.

A Hungarian version by Sándor Nagy, entitled "A Halley-üstökös," appears in *Föld és ég*, 13. évf., 1978. aug., p. 114–115 (Q4.F64, v. 13).

1257

Halley's Comet. South African journal of science, v. 6, Dec. 1909, Mar., Aug. 1910: 63–64, 201–202, 421; v. 7, June 1911: 357. illus. Q85.S5, v. 6–7

News notes; the second and third are entitled "Priority in Discovery of Halley's Comet" and "Phenomena Coincident With the Transit of Halley's Comet." The first and second are accompanied by charts showing the Comet's path in the southern heavens during Oct. 12–Dec. 26, 1909, and Dec. 31, 1909–May 30, 1910, respectively.

See also Charles F. Juritz's address, "Celestial Chemistry," in the July 1910 issue, which discusses Halley's Comet at some length (v. 6, p. 374–378).

1258

Halley's Comet. Spectator, v. 104, Mar. 12, 1910: 414. AP4.S7, v. 104

1259

Halley's Comet. Star of hope, v. 11, Mar. 26, 1910: 413. HV8301.S8, v. 11

"By Sing Sing no. 58561."

See also news items on the comet in the "World Over" section of this prison paper, v. 12, Apr. 23, 1910, p. 21, and June 4, p. 69.

1260

Halley's Comet. Times (London), Apr. 23, 1835: 5; Aug. 7: 5; Aug. 22: 5; Aug. 24: 3; Aug. 25: 6; Aug. 29: 3; Aug. 31: 3; Sept. 1: 6; Sept. 3: 5; Sept. 5: 4; Sept. 11: 5; Sept. 18: 3; Sept. 26: 7; Sept. 30: 4; Oct. 2: 3; Oct. 5: 7; Oct. 6: 3; Oct. 7: 1; Oct. 8: 5; Oct. 9:3; Oct. 13: 3; Oct. 16: 5; Oct. 17: 3; Oct. 19: 3; Oct. 21: 5; Oct. 22: 3; Oct. 23: 3; Oct. 26: 5; Oct. 28: 2; Oct. 29: 3; Nov. 4: 3; Nov. 10: 3; Nov. 18: 3; Nov. 20: 3; Nov. 24: 5; Nov. 27: 4; Nov. 30: 5; Dec. 3: 7; Jan. 20, 1836: 1; Jan. 23: 7; Jan. 26: 3; Mar. 11: 5. N&CPR

News items and letters to the editor of varying length, sometimes headed "The Comet," and sometimes with no title. Among the letters are a number from Sir James South (see item 2778) and a controversy between W. S. Stratford of the Nautical Almanac Office and one John Taylor of Liverpool who had some unusual ideas about the comet's motion (see issues of Nov. 18, 20, 24, and 27, and Dec. 3, 1835). The news notes include reports from both domestic and foreign sources.

1261
Halley's Comet. Town & country, v. 65, May 14, 1910: 102. AP2.T6, v. 65

1262
Halley's Comet. *In* Van Nostrand's scientific encyclopedia. 5th ed. Edited by Douglas M. Considine. New York, Van Nostrand Reinhold [1976] p. 1230. illus. Q121.V3 1976

1263
Halley's Comet. Vassar miscellany, v. 39, Jan. 1910: 270–272. LH1.V3M5, v. 39

Signed M. E. H., 1912.

1264
Halley's Comet. Lecture by Sir Robert Ball. English mechanic and world of science, v. 91, Mar. 18, 1910: 147. T1.E5, v. 91

Summarizes talk given at the Times Book Club on Mar. 11.

1265
Halley's Comet. What was seen in 1910. *In* The Foundation library for young people. v. 4. [The wonderful universe. Eric Doolittle, editor-in-chief] New York, Educational Society [1911] p. 253–259. illus. AC5.F7, v. 4

1266
[Halley's Comet—an evil omen for the English in 1910 as in 1066?] Observatory, v. 32, Apr. 1909: 186. QB1.O2, v. 32

1267
Halley's Comet and a hypothetical new planet. Sky and telescope, v. 44, Nov. 1972: 297–298. QB1.S536, v. 44

About Brady's hypothesis.

1268
Halley's Comet and Chinese records. Nature: physical science, v. 238, July 24, 1972: 49. Q1.N22, v. 238

Report and comment on Tao Kiang's study, "The Past Orbit of Halley's Comet" (see item 1645).

1269
Halley's Comet and its history. English mechanic and world of science, v. 91, May 27, 1910: 372–373. T1.E5, v. 91

Summarizes a lecture given by Sir Robert Ball at the Queen's Hall on May 21.

1270
Halley's Comet and meteorology. Nature, v. 83, May 12, 1910: 320–322. illus. Q1.N2, v. 83

Includes a report on plans by the International Commission for Scientific Aëronautics for a series of kite and balloon ascents during May 18–20; a letter from W. F. Denning on the meteor shower observed at Cape Town on May 7 and a fireball seen at Guernsey on May 3; reports of observations received from Gustave Gillman at Aguilas (including a sketch of the comet as seen on May 2), A. C. Jordan at Broadstairs, C. Leach at Malta, and H. H. Gruning at Ealing. Observations published in local newspapers are summarized, as is Emanuelli's article on the comet's velocity at perihelion in the *Atti* of the Pontificia Accademia Romana dei Nuovi Lincei.

1271

Halley's Comet and meteors. Observatory, v. 33, May 1910: 219.
QB1.O2, v. 33

Note advising observers of the Eta Aquarid shower (predicted for May 1–7) to watch for anything unusual.

1272

Halley's Comet and superstition. Japan chronicle, Nov. 17th, 1910: 879.
AP8.J3, 1910

1272a

Halley's Comet as Arizona's star. Tucson citizen, May 21, 1910: 1.
N&CPR

Summarizes a talk given by Dr. A. E. Douglass to students of the local high school. After describing the comet and his observations, he remarked, "The thing we all want is statehood and as a last thought I would have you imagine this great comet to be Arizona's own particular star, hastening on its way to a place in the American flag, leaving a long trail of light behind it."

1273

Halley's Comet as seen at Calcutta on May 28th, 1910. Knowledge, new ser., v. 7, Aug. 1910: facing p. 306.
Q1.K7, n.s., v. 7

Full-page reproduction of a photograph taken with a 6-inch Cooke photovisual telescope by Messrs. H. Connell, Taylor, and Woodhouse at the Presidency College. A brief description of the plate is given on p. 306.

1274

Halley's Comet; bulletin. no. 1+ Oct. 1982+ [Ottawa?]
La Comète de Halley; bulletin. no 1+ oct. 1982+ [Ottawa?]

Produced jointly by the Royal Astronomical Society of Canada, the Herzberg Institute of Astrophysics of the National Research Council of Canada, and the National Museum of Science and Technology.

1275

Halley's Comet caught in a camera. Presbyterian banner, v. 96, Sept. 23, 1909: 409.
BX8901.P48, v. 96

1276

Halley's Comet detected by Hale Telescope. Aviation week & space technology, v. 117, Nov. 1, 1982: 22.
TL501.A8, v. 117

1277

Halley's comet: distant encounter. Economist, v. 286, Jan. 22, 1983: 73–74. illus.
HG11.E2, v. 286

Chiefly about plans for deep-space Halley missions and what scientists hope to learn from them. Concludes by erroneously stating that the comet will be invisible to the naked eye.

1278

Halley's Comet: don't expect too much. Science news, v. 107, June 7, 1975: 367. Q1.S76, v. 107

1279

Halley's Comet found Sept. 11, 1909. Popular astronomy, v. 17, Oct. 1909: 512–513. QB1.P8, v. 17

Includes ephemeris for the period Aug. 13–Nov. 11, 1909. Wolf's discovery photograph is reproduced on a plate in the Nov. 1909 issue, opposite p. 578.

1280

Halley's Comet in 1835. *In* Royal Astronomical Society of Canada. Journal, v. 4, Mar./Apr. 1910: 159–160. QB1.R485, v. 4

The author of these notes is not identified.

1281

Halley's Comet in 1835, and other comets seen during the last century and this. Illustrated London news, v. 136, Apr. 23, 1910: 618. AP4.I3, v. 136

The drawing shows the comets of 1882, 1907, 1811, 1861, 1819, 1843, 1858, Jan. 1910, and 1874 as well as the 1835 appearance of Halley's Comet.

A copy of this drawing, with a New York City skyline replacing that of Paris, can be seen in the *New York Times*, v. 59, May 8, 1910, magazine section, p. 7 (N&CPR).

1282

Halley's Comet in 1456. Nature, v. 31, Apr. 23, 1885: 588. Q1.N2, v. 31

On Toscanelli's observations as recorded in a manuscript discovered some years previously at the national library in Florence.

1283

Halley's Comet is already making trouble on earth. New-York tribune, v. 70, May 8, 1910, pt. 4: 2. illus. N&CPR

1284

Halley's Comet: its history. Graphic, v. 81, Jan. 1, 1910: 14. AP4.G7, v. 81

Signed F. M. A.

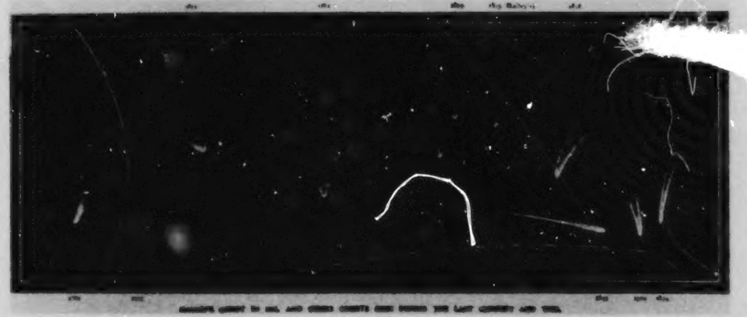
1285

Halley's Comet—meteor. English mechanic and world of science, v. 91, June 3, 1910: 400. T1.E5, v. 91

Letter to the editor signed C. O. D. reporting that although he watched the comet "every evening last week" at Kendal he could discern little more than a "round, misty blob of light."

1286

Halley's Comet mission. Spaceflight, v. 23, June 1981: 172. TL787.B725, v. 23



Some of the more notable comets seen during the century that ended with the 1910 return of Halley's Comet are depicted together here, looking east over the skyline of Paris. The comet of 1882, sometimes called the great September comet, was a sungrazer, approaching to within 300,000 miles of the sun's surface (photosphere) at perihelion; its brilliance was such that it could be seen during the day. Daniel's Comet of 1907, a more modest object, was nevertheless regarded by A. C. D. Crommelin as "the brightest that had been seen in Europe since the great comet of 1882." To the impressive comet of 1811 was attributed the fine summer weather that produced a memorable vintage. (A bottle of this renowned "comet wine" came on the market as recently as November 1982.) Tebbutt's Comet of 1861 was also visible in daylight; the earth is said to have passed through its tail on June 29–30. The great comet of 1819 was visible to the naked eye for a month and easily outshone the 1835 apparition of Halley's Comet. Donati's Comet of 1858 is often described as the most beautiful ever seen; certainly those privileged to view it never forgot the sight. The comet of 1843, another sungrazer, could also be seen during the day and developed a phenomenally long tail. At perihelion it was less than 100,000 miles from the sun's photosphere. Comet 1910a, yet another daylight comet, arrived suddenly in January and caused some confusion among people who were looking for Halley's Comet at the time. Coggia's great comet of 1874 was predicted to pass close by the earth, which gave rise to fears of a collision. It also inspired Mark Twain to write "A Curious Pleasure Excursion," a sketch in the form of an elaborate prospectus for a luxury cruise through the galaxy, on board the comet. First published in the *New York Herald* of July 6, 1874, it was included in *Mark Twain's Sketches, New and Old* (Hartford, Conn., American Pub. Co., 1875. PS1319.A1 1875a Rare Bk. Coll.). From the *Illustrated London News*, v. 136, Apr. 23, 1910, p. 618.

Reports the selection of "British Aerospace Dynamics Group Space & Communications Division to head development of the Giotto space probe which will intercept Halley's Comet in 1985/86."

1287
Halley's Comet 1986: your view from earth. Odyssey, v. 5, Mar. 1983: 15–18. illus. (part col.) QB46.O3a, v. 5

1288
Halley's Comet 1909 c. Astronomische Nachrichten, Bd. 186, Nr. 4457, 30. Nov. 1910: columns 285–286. QB1.A77, v. 186

Brief notes, from Keeling, who reports photographs taken at Helwan on Nov. 7, 9, and 11, and from Barnard, on an observation made at the Yerkes Observatory on Nov. 11. A considerable discrepancy in magnitude estimates is apparent (see item 1683).

1289
Halley's Comet—now fast fleeing away. Sphere, v. 41, June 4, 1910: 274. port. AP4.S73, v. 41

1290
Halley's Comet: observations in Kobe. Japan chronicle, May 26th, 1910: 909. AP8.J3, 1910

1291
Halley's Comet: observed by naked eye in Japan. Japan chronicle, May 5th, 1910: 777. AP8.J3, 1910

1292
Halley's Comet offers scientific challenge. Aviation week & space technology, v. 108, Apr. 17, 1978: 15. TL501.A8, v. 108

1293
Halley's comet—out of sight, but not beyond study. New scientist, v. 95, July 29, 1982: 300. illus. Q1.N52, v. 95

Reports and comments on the findings of Belton and Butcher, published in *Nature*, v. 298, July 15, 1982, p. 249–251 (Q1.N2, v. 298).

1294
Halley's Comet: past, present, and future. Sky and telescope, v. 58, Sept. 1979: 232. QB1.S536, v. 58

A letter from Donald K. Yeomans commenting on this news note appears in the Nov. 1979 issue, p. 426.

1295
Halley's Comet; question. Popular astronomy, v. 19, Dec. 1911: 654. QB1.P8, v. 19

Responses to queries relating to the comet's 1910 apparition—diameter of the head in miles, velocity during perihelion, length of tail in miles, and when last seen by telescope.

1296
The Halley's Comet rebellion in China. Literary digest, v. 40, May 14, 1910: 966–968. illus.
AP2.L58, v. 40

Includes extracts from a report by the Peking correspondent of the London *Times* and translations from *Indépendance belge*. Three cartoons from the "comet number" of *Simplicissimus* are reproduced with English captions.

1297
Halley's comet returns. New scientist, v. 96, Oct. 28, 1982: 215.
Q1.N52, v. 96

Includes credit for the astronomer who calculated the ephemeris that made the discovery possible (Donald K. Yeomans of the Jet Propulsion Laboratory).

1298
Halley's Comet seventy years ago. *In* Astronomical Society of Wales, *Cardiff*. Cambrian natural observer, v. 11, Jan. 1910: 193.
QB1.A45, v. 11

"... an aged Welshman, Mr. W. R. Jones, of Judson, U.S.A.," recalls seeing the comet in 1835, when he was eight years old.

1299
Halley's Comet swings into view. Discover, v. 3, Dec. 1982: 16. illus.
Q1.D57, v. 3

"In the past five years, aided by the calculations of Don Yeomans of Caltech's Jet Propulsion Laboratory, virtually every large observatory in the world has spent some time scanning Canis Minor for the comet ... The two Caltech astronomers think they first detected the comet in September, but it passed in front of a bright star—which overwhelmed its image—before its orbit could be confirmed."

1300
Halley's Comet Watch newsletter. v. 1+ May/June 1982+ Vincentown, N.J. illus.

Frequency varies.

"Official publication of Halley's Comet Watch '86," described as "an international organization dedicated to the historical, scientific and sociological study of the 1985–86 return of Halley's Comet."

1301
Halleys komet. Folkebladet, 31. aarg., no. 9, 1910: 105–106. illus.
AP45.F6, v. 31

1302
Halleys Komet. Morgenblatt für gebildete Stände, 27. Nov. 1835: 1136.
AP30.M6, 1835

A correspondent reports on the comet's appearance in Dresden, where it evidently did not live up to advance billing.

1303
Halley's spin period is 10^{hr} 19^{min}. Comet news service, Apr. 24, 1980: 1.
DN-Ob

On the determination of the comet's rotation period by Dr. Fred L. Whipple, announced in IAU Circular no. 3459.

1304

Der Halleysche Comet. Ephemeride des Halleyschen Cometen vom 3. Aug. 1835 bis 11. Febr. 1836. *In* Harding, Karl L., *and* G. Wiesen, *eds*. Kleine astronomische Ephemeriden für das Jahr 1835. 6. Jahrg. Göttingen, Vandenhoeck und Ruprecht, 1834. p. 93–96. QB8.G44, 1835

See also a review (signed P.) of Littrow's *Beyträge zu einer Monographie des Halley'schen Cometen* and Möbius's *Die wahre und die scheinbare Bahn des Halley'schen Kometen*, on p. 133–134.

1305

De Halleysche Komeet, of hare wederkomst in 1835. Breda, Broese, 1835.

Listed in the *Nieuwsblad voor den Boekhandel*, 11 Junij 1835, p. 1 (Z2435.N68, 1835).

1306

Der Halleysche Komet. Illustrirte Zeitung, 129. Bd., 22. Aug. 1907: 331–332. illus. AP30.I5, v. 129

Signed K.

1307

Der Halleysche Komet. *In* Jahrbuch der Astronomie und Geophysik. 20. Jahrg.; 1909. Leipzig, E. H. Mayer, 1910. p. 108. Q9.J13, v. 20

1308

Der Halleysche Komet. Morgenblatt für gebildete Stände, 7. Okt. 1835: 959. AP30.M6, 1835

Report from a correspondent on the first sighting of the comet in Berlin by Kunowsky and subsequent notices about it in the city's newspapers.

1309

Der Halley'sche Komet. Natur, 1. Jahrg., 31. Okt. 1909: 52. illus.

Reports the recovery of the comet and discusses prospects for seeing it in coming months. A drawing shows the comet's path in the sky over a cityscape, from mid-September to mid-December 1909.

1310

[Der Halleysche Komet] Naturwissenschaftliche Wochenschrift, 25. Bd., 17. Juli 1910: 456–457. Q3.N9, v. 25

Summarizes a lecture given by Dr. (Paul?) Schwahn at a meeting on May 6 of the Deutsche Gesellschaft für volkstümliche Naturkunde.

1311

[Der Halleysche Komet] *In* Prussia. Allgemeine preussische Staats-Zeitung, 2. Okt. 1835: 1117. J7.G185, 1835

Quotes an article in the *Breslauer Zeitung* of 28. Sept. reporting that the comet could be seen with the naked eye on the previous evening, furnishing information on where to look for it, and estimating its size from its distance and luminosity.

1312
[Der Halleysche Komet] *In* Prussia. Allgemeine preussische Staats-Zeitung, 17. Nov. 1835: 1307–1308. J7.G185, 1835

An article from the *Hannoversche Zeitung* describing local observations of the comet, its present invisibility at perihelion, and its expected reappearance in mid-December.

1313
Der Halleysche Komet. Sirius, 43. Bd., Feb. 1910: 30–35. DN-Ob

Includes an ephemeris, prepared by Crommelin and Smart, for the period Mar. 1 – May 30, and several sets of elements computed by Ivanov, and discusses the calculation of the comet's path and various activities being undertaken for its scientific study.

1314
Der Halleysche Komet. Sirius, 43. Bd., Juli 1910: 145–151. DN-Ob

Includes reports of observations from a variety of sources, quoting both letters and publications. A few additional reports are noted in the Aug. issue, p. 189, under the heading "Mitteilungen über den Halleyschen Kometen."

1314a
Der Halley'sche Komet als Pädagoge. Ethische Kultur, 18. Jahrg., 1. Mai 1910: 70–71. 4-Serials

Signed S.

Comments on the interest in astronomy generated by the comet and urges that the schools do something quickly to teach the children about the heavens and explain to them that the comet will not destroy the earth.

1315
Der Halleysche Komet bei seiner Rückkehr 1910. Die Flächenhelligkeit des Halleyschen Kometen. Die Bewegung der Moleküle im Schweife des Halleyschen Kometen. *In* Jahrbuch der Astronomie und Geophysik. 21. Jahrg.; 1910. Leipzig, E. H. Mayer, 1911. p. 33–49. plate. Q9.J13, v. 21

Bibliographic footnotes.

The plate, facing p. 32, reproduces Lick Observatory photographs taken June 6 and 7.

1316
Der Halley'sche Komet für den Bürger und Landmann dargestellt. Leipzig, Reclam, 1836. 16 p.

1317
Der Halleysche Komet kommt auf uns zu. Sterne und Weltraum, 20. Jahrg., Mai 1981: 184. QB1.S834, v. 20

Quotes a bulletin issued by the Max-Planck-Gesellschaft.

1318
Der Halleysche Komet und die Gärtnerei. Möller's deutsche Gärtner-Zeitung, 25. Jahrg., 1. Apr. 1910: 146–147. illus. DNAL

The illustration, by Emil Limmer, entitled "Einfluss des Sternes und seines Schweifes auf das Pflanzenwachstum in einer Herrschaftsgärtnerei," shows greenhouses with the glass panes removed to avoid breakage as the mushrooms and green plants burgeon, their growth accelerated by the nourishing chemicals in the comet's tail.

The illustration is reproduced with an English caption in the *Florists' Exchange*, v. 29, Apr. 30, 1910, p. 785 (SB403.F77, v. 29).

1319

Der Halleysche Komet und die neueste Kometenfurcht. Sirius, 43. Bd., Mai 1910: 97–102. illus. DN-Ob

A diagram shows the comet's path in the vicinity of the earth's orbit during May.

1320

Halleyscher Komet (1909 c). Astronomische Nachrichten, Bd. 183, Nr. 4376, 14. Dez. 1909: columns 125–126. QB1.A77, v. 183

Reports from Millosevich in Rome, Nijland in Utrecht, and von Buttlar in Breslau of observations made Dec. 3–5.

1321

Halleyska kometen, år 1835. Falun, Roselli, 1835. 8 p.

1322

Halleyske cometen. Göteborg, S. Norberg, 1834.

1323

Halliday, Ian. Preparing for Halley's Comet. *In* Royal Astronomical Society of Canada. Journal, v. 77, Apr. 1983: 63–72. illus. QB1.R485, v. 77

"Presidential Address delivered by the retiring President of the R.A.S.C. on May 22, 1982 at the General Assembly in Saskatoon."

1324

Hallock, Gerard B. F. Have you seen the comet? A sermon for you people. Christian work and the evangelist, v. 88, Feb. 5, 1910: 190, 192–193. illus. BR1.C64, v. 88

1325

Hallock, Joseph N. Halley's Comet again. Christian work and the evangelist, v. 88, Apr. 30, 1910: 592. BR1.C64, v. 88

1326

Hallock, Joseph N. Up early, look east, and lo! the comet. Christian work and the evangelist, v. 88, Apr. 16, 1910: 526–527. illus. BR1.C64, v. 88

1327

Hallock, William. Halley's Comet: celestial wanderer again near the earth; its visits traced for twenty centuries. New York times, v. 59, Dec. 5, 1909, magazine section: 3. illus. N&CPR

1328

Halluin, Henri d'. Un episode peu connu: la découverte de la comète de Halley par Palizsch en 1758. *In* Association astronomique du Nord, *Lille*. Bulletin, 13. année, nov./déc. 1939: 62–63. QB1.A295, v. 13

1329

Hamburg. Sternwarte. Beobachtungen von Kometen und kleinen Planeten auf der Hamburger Sternwarte in Bergedorf in den Jahren 1909 bis 1912. Hamburg, Kommissionsverlag von L. Gräfe & Sillem, 1913. 76 p. plates. (*Its* Mitteilungen, Nr. 12) QB4.H2, Nr. 12

Partial contents: 1. Beobachtungen von Kometen am 26 cm-Äquatorial.—3. Physische Beobachtungen und Zeichnungen von Kometen von K. Graff.

Data on 61 observations of Halley's Comet made between Nov. 18, 1909, and June 6, 1910, are recorded on p. 4–11, and descriptive comments appear on p. 62–63. Plate 6 reproduces drawings that show the structure of the comet's head and tail on May 26.

This number of the Mitteilungen was also issued, together with Nr. 13, as 5. Beiheft to the *Jahrbuch der Hamburgischen wissenschaftlichen Anstalten*, 30. Jahrg., 1912 (Q49.H47, Beiheft 5, 1912).

1330

Hamid, Salah E., Brian G. Marsden, *and* Fred L. Whipple. Influence of a comet belt beyond Neptune on the motions of periodic comets. Astronomical journal, v. 73, Oct. 1968: 727–729. QB1.A3, v. 73

References (14): p. 729.

"The secular perturbations produced by a comet belt beyond Neptune on the orbits of seven periodic comets of large aphelion distances are presented. The orbit of P/Halley is discussed in an attempt to determine the mass of such a comet belt. The possibility remains that the result is affected by unknown nongravitational forces. It is concluded, however, that the available evidence does not support the hypothesis of a comet belt of significant mass."

1331

Hamilton, Edmond. The comet kings. Captain Future, v. 4, summer 1942: 11–79. illus. N&CPR

In the Pulp Fiction Collection.

"Trapped in the depths of Halley's Comet, the futuremen battle fourth-dimensional monsters in a titanic struggle to save the system's solar energy!"

Also published separately as a paperback in New York by Popular Library ([1969] 127 p.).

1332

[Hammer, Ernst H. H.] Vom Halleyschen Kometen. Das Weltall, 10. Jahrg., 1. Juni 1910: 276. QB1.W4, v. 10

Quotes in full, as reflecting the general quality of astronomical reporting in the daily press, an item published in the Stuttgart *Neues Tagblatt* for May 30, 1910, noting that the comet would cross the meridian of Stuttgart that day between 5 and 6 p.m. and comparing the practical significance of the event to that of transits of Venus. An English translation appears in the *Observatory*, v. 33, July 1910, p. 305–306 (QB1.O2, v. 33).

1333

Hanssen, Carl J. T. The Halley Comet. Chemical news, v. 101, Apr. 8, 1910: 158–159. QD1.C5, v. 101

A letter from J. Rutherford Hill, querying the author's explanation of the comet's tail, appears in the Apr. 15 issue, p. 179.

1334

Hardcastle, Joseph A. Land and sky marks for Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 20, Mar. 1910: 318. illus. QB1.B75, v. 20

Letter to the editor offering pointers on how to locate the comet in the morning sky, Apr. 24–May 10.

1335

Harding, H. G. A. Notes on the condition of the atmosphere during the recent contact of the earth with the tail of Halley's Comet. Communicated by W. J. Clunies Ross. *In* Royal Society of New South Wales, *Sydney*. Journal and proceedings, v. 44, pt. 3, 1910: 319. Q93.N51, v. 44

Paper read Aug. 3, 1910.

No abnormalities were found.

1336

[Harding, Karl L.] Ueber die Cometen von bekannter Umlaufszeit. *In* Harding, Karl L., *and* G. Wiesen, *eds*. Kleine astronomische Ephemeriden für das Jahr 1831. Göttingen, Vandenhoeck und Ruprecht, 1830. p. 97–104. QB8.G44, 1831

Halley's Comet is the first of four discussed; the others are the comets of Encke, Biela, and Olbers.

1337

Hargreaves, George T. The tale of the comet. New York American, May 20, 1910: 18. N&CPR

Poem.

1338

Hariot, Thomas. Observations of Halley's Comet in the year 1607. *In* Bradley, James. Miscellaneous works and correspondence. Oxford, At the University Press, MDCCCXXXII. p. [511]–522. QB3.B8

Found among Hariot's papers in 1784 and published by the Baron de Zach in 1793 "but so very inaccurately, that it seemed right ... to reprint them faithfully from the original manuscripts."

Includes, on p. 512–514, records of observations made by William Lower which Baron de Zach erroneously ascribed to Nathaniel Torporley (see item 3153).

1339

Hart, W. Edward. Essai sur les comètes, et particulierement sur la comète de Halley. Port-Louis—Ile Maurice, Impr. "Minerva," 1910. 189 p.

Held by the British Library under shelfmark 8563. c. 20.

See especially chapter 9, "La comète de Halley dans l'histoire—Ses anciennes apparitions—Son dernier retour, en 1835—Que sera-t-elle en mai 1910?" on p. [165]–189.

1340

Hartmann, Fr. J. Was hat die Welt zu fürchten von dem Kometen des Jahres 1834? Oder über die sechste Erscheinung des Halleyschen Kometen und über Kometen im Allgemeinen. Nebst einer einleitenden Übersicht unsers Sonnensystems. Quedlinburg, G. Basse, 1830. 76 p. fold. plate.
CtY; NIC; NjP; WU

1341

Hartmann, Johannes F. Die Astrophotographie im Jahre 1910. *In* Jahrbuch für Photographie und Reproduktionstechnik. 25. Jahrg.; 1911. Halle a.S., W. Knapp, 1911. p. 191–194. TR1.J3, 1911

Photographing Halley's Comet is discussed on p. 191–192.

1342

Hartmann, Johannes F. Beobachtungen des Halleyschen Kometen zur Zeit seiner Erdnähe. Astronomische Nachrichten, Bd. 184, Nr. 4414, 27. Mai 1910: columns 371–372. QB1.A77, v. 184

Observations made May 18–20 at the Sonnwendstein.

1343

Hartmann, Johannes F. Messungen der Flächenhelligkeit des Halleyschen Kometen. Astronomische Nachrichten, Bd. 185, Nr. 4431, 4. Aug. 1910: columns 233–240. illus. QB1.A77, v. 185

Supplemented by a brief report, in French, on the comet's tail from Eugène M. Antoniadi (columns 239–242).

1344

Harvard University. *Observatory*. Astronomical bulletin. Cambridge, Mass. DN-Ob

The issues relating to Halley's Comet are listed below. Each consists of a single leaf. Many were published verbatim or formed the basis of news reports in astronomical and general scientific periodicals.

no. 355, Sept. 13, 1909.

Reports Wolf's recovery of the comet and gives its position. "The Comet is visible in a large telescope."

no. 357, Sept. 17, 1909.

Gives positions obtained by Curtis from photographs taken Sept. 12, 13, and 14 at Lick Observatory. "The comet is very faint."

no. 358, Sept. 20, 1909.

Reports visual observations at Yerkes Observatory by Burnham on Sept. 15 and Barnard on Sept. 17, as well as photographs taken there by O. J. Lee on Sept. 15, 16, and 17. "15½ magn., 12″ diameter, with possibly a faint nucleus or indefinite fleck of light in it."

no. 359, Sept. 27, 1909.

From a visual observation on Sept. 24 Barnard reports that the comet "was considerably brighter than on the 17th; estimates, as 15th. mag.; measured diameter 11″; indefinite condensation almost amounting to a small nucleus; no definite boundary."

no. 360, Sept. 27, 1909.

G. C. Comstock, director of Washburn Observatory, provides a search ephemeris for Sept. 22–Nov. 11, 1909.

no. 361, Sept. 30, 1909.

Father Searle furnishes orbital elements and an ephemeris for Sept. 22–Oct. 28, 1909. "The nearest approach of the Comet will be on May 19, at a distance about 0.14 [AU] ... it seems highly probable that we shall on May 18, be inside the tail."

no. 362, Oct. 13, 1909.

Reports Barnard's observation of Sept. 26 at Yerkes Observatory, and the revised elements calculated by Father Searle on the basis of that observation.

no. 364, Oct. 23, 1909.

Barnard reports observations made Oct. 17 and 19. "On these two dates, the comet was not fainter than 13½ mag. It was about 15″ diameter, or less. Indefinite brightening in middle. No elongation."

no. 365, Oct. 25, 1909.

"Halley's Comet appears to be growing brighter somewhat rapidly. It was seen without difficulty on October 17" by O. C. Wendell and Leon Campbell at Harvard College Observatory. There is also a correction for a positional figure reported in no. 364.

no. 367, Nov. 2, 1909.

Father Searle provides a further revision of orbital elements and an ephemeris for Nov. 5–29, 1909. "These elements give a geocentric conjunction in longitude of the Comet with the Sun on May 18.681 G.M.T., the Comet's geocentric latitude being then +4′15″ ... it seems quite probable that there may be a transit."

no. 369, Nov. 17, 1909.

Father Searle's ephemeris for Dec. 1–31, 1909.

no. 370, Dec. 6, 1909.

Father Searle's ephemeris for Jan. 2–Feb. 1, 1910. The Smith College Observatory reports that the comet was visible in a 3-inch telescope on Dec. 4.

no. 372, Dec. 8, 1909.

Father Searle's ephemeris for Feb. 3–Mar. 5, 1910.

no. 378, Dec. 31, 1909.

Relays a telegram from E. B. Frost, director of Yerkes Observatory: "Prismatic camera shows light of Halley's Comet to be now largely due to third cyanogen band."

no. 379, Jan. 8, 1910.

Quotes a letter from Frost: "On his photograph of Halley's Comet, taken with the Bruce Telescope on December 29th, Professor Barnard finds a very faint tail in position angle 69°, with a length of 10′. The tail was very slender and straight."

no. 398, Apr. 16, 1910.

Reports visual observations of the comet and its spectrum at Yerkes Observatory on Apr. 12. The comet was also photographed there on the 14th. "No tail was visible with any of the instruments."

no. 399, Apr. 22, 1910.

Further visual and photographic observations made at Yerkes Observatory on Apr. 17. Barnard found the comet's brightness much increased since the 14th. The comet was seen with the naked eye early on the 21st at Harvard College Observatory, and the brightness of the nucleus was photometrically determined to be mag 6.37. The total brightness was estimated at mag 4.5, and the tail length, at 1°.5.

no. 400, Apr. 27, 1910.

Provides details of further Harvard observations. On the morning of the 27th, the comet was easily seen with the naked eye. The measured brightness of the nucleus was mag 6.01; the total brightness was estimated at mag 3.0 or brighter, and the tail was over 3° long.

no. 401, Apr. 29, 1910.

The bright sodium D line was photographed in the comet's spectrum by Wright at Lick Observatory.

no. 402, May 5, 1910.

The comet's appearance on the morning of May 1, described in a letter from D. W. Morehouse at Drake University, "vividly recalled" Smyth's observations of Oct. 11, 1835. A photograph of 14 minutes' exposure showed a tail more than 2° long.

no. 403, May 6, 1910.

Details of observations made at Yerkes and Harvard College observatories. While the nucleus, as measured at Harvard, was fainter, at mag 7.06, than it had been on Apr. 27, the comet's total light, estimated at mag 2.3, was greater.

no. 405, May 17, 1910.

Gives the comet's position as observed by R. G. Aitken at Lick Observatory on May 15. Metcalf reports from Taunton that the comet's tail early on the 17th "was 90° in length and extended to 71 Aquilae. He estimated the breadth of the tail at the end, as 8° or 9°." Professor Whiting of Wellesley College confirmed the tail length. "Accordingly, if clear, the tail of the comet should be visible in the east soon after midnight."

no. 406, May 18, 1910.

Kobold at Kiel provides times of ingress and egress for the comet in its expected transit across the sun. Barnard at Yerkes and Metcalf at Taunton describe the comet's tail on May 15 and 18, respectively.

no. 407, May 18, 1910.

A. O. Leuschner of Berkeley, Calif., provides a short ephemeris of the comet during the time of its transit across the sun, as calculated by Crawford and Meyer.

no. 408, May 19, 1910.

W. W. Campbell, director of Lick Observatory, states that the comet was visible in the eastern sky early on the 19th, and that the tail was at least 140° long, and lagging far behind the radius vector. "The opinion is expressed that the Earth will probably not pass through the tail."

no. 409, May 20, 1910.

Reports from several observers who saw the tail in the morning on May 18 and 20.

no. 410, May 20, 1910.

W. W. Campbell reports observation of the tail at Lick Observatory early on May 20.

no. 411, May 21, 1910.

Reports from various observers concerning the comet's tail on May 19 and 20, and a position for the comet on the 20th from Lick Observatory.

no. 412, May 25, 1910.

An assortment of observations of the comet and/or its tail on May 18, 23, and 24. O. C. Wendell at Harvard took two sets of photometric measurements on the 24th and found the brightness of the nucleus to be mag 6.52 and mag 6.61. The comet's total light was estimated at mag 2.1. A. E.

Douglass at Tucson Observatory reported seeing the nucleus divided into two parts on the 24th.

no. 413, May 31, 1910.

Alfred E. Harris of Worcester, Mass., describes the appearance of the tail early on May 20. Harvard measurements of the brightness of the nucleus were mag 6.43 on May 26 and mag 8.03 on the 29th. The total light and tail length were estimated at mag 2.2 and 38° on the 26th, and mag 2.9 and 30° on the 29th. Photographs were taken both nights. This bulletin is accompanied by a sketch, from Harvard College Observatory, of the comet's path May 27–June 27, 1910.

no. 429, Oct. 25, 1910.

Presents Seagrave's ephemeris for Jan. 3–Apr. 15, 1911.

no. 433, Nov. 14, 1910.

Includes report of an observation made by Barnard at Yerkes Observatory on Nov. 11.

1345

Harwit, Martin. Origins of the zodiacal dust cloud. Journal of geophysical research, v. 68, Apr. 15, 1963: 2171–2180. illus. QC811.J6, v. 68

References (18): p. 2179–2180.

Data relating to P/Halley's dust emission are cited in a discussion of comet debris as a possible source.

1346

Harzer, Paul. Ueber die Störungen des Halley'schen Cometen. Astronomische Nachrichten, Bd. 110, Nr. 2637, 27. Dec. 1884: columns 353–366. QB1.A77, v. 110

1347

Hasegawa, Ichiro. Catalogue of ancient and naked-eye comets. Vistas in astronomy, v. 24, pt. 1, 1980: 59–102. QB1.V56, v. 24

Data based on Chinese, Korean, Japanese, and European records dating from 2314 B.C. to A.D. 1700 are presented in tabular form; notes furnish quotations from and comments on the old records from which the data are derived. For purposes of comparison, a supplementary table lists naked-eye comets observed during 1701–1970; additional tables provide corrections and revisions of (1) Pingré and Baldet, and (2) Ho Peng Yoke. The principal table identifies appearances of P/Halley in 240, 163, 87, and 12 B.C., and 66, 141, 218, 295, 374, 451, 530, 607, 684, 760, 837, 912, 989, 1066, 1145, 1222, 1301, 1378, 1456, 1531, 1607, and 1682; the supplementary table lists the appearances of 1759, 1835, and 1910.

1348

Hass, Fritz. Der Halleysche Komet bei seiner Wiederkehr. Meggendorfer-Blätter, 80. Bd., 22. Feb. 1910: 150. col. illus.

Cartoon.

1349

Hassard, Albert R. Amateur astronomy at Toronto. Popular astronomy, v. 18, Aug./Sept. 1910: 446–447. QB1.P8, v. 18

Describes the widespread interest aroused by Halley's Comet among the general public.

1350

Hassenstein, Walter G. Gelegentliche Beobachtungen am 13-zölligen Refraktor der Sternwarte Königsberg. Astronomische Nachrichten, Bd. 184, Nr. 4402, 9. Apr. 1910: columns 167–172 QB1.A77, v. 184

Includes an observation of Halley's Comet made Dec. 16.

1351

Hauge, Øivind. Halleys komet. Astronomisk tidsskrift, årg. 9, nr. 2, 1976: 64–69. illus., plans. DLC

1352

Hawkins, Hester Periam. Halley's Comet. With plan of its pathway. London, King, Sell & Olding [1909] 16 p.

Held by the British Library under shelfmark 08560. de. 32.

A brief review appears in the British Astronomical Association's *Journal*, v. 20, Nov. 1909, p. 103 (QB1, B75, v. 20).

1353

Hawkins, Hester Periam. Halley's Comet—moon maiden. English mechanic and world of science, v. 91, July 8, 1910: 522. T1.E5, v. 91

Letter to the editor that includes description of "shafts of faint nebulous light" observed at Betchworth, Surrey, on the night of May 20, which she thinks may have been the comet's tail.

1354

Hawks, Ellison. [Halley's Comet] *In his* Astronomy. London, T. C. & E. C. Jack, 1922. (Romance of reality series) p. 232–245. illus., plate. QB44.H39

1354a

Hawks, Ellison. Halley's Comet. *In* Leeds Astronomical Society. Journal and transactions. no. 17; 1909. Leeds, R. Jackson, 1910. p. 71–72. DLC

Reprints a letter dated Dec. 4 first published in the *Yorkshire Post*, describing an observation made Dec. 3.

1355

Hawks, Ellison. Halley's Comet in 1682. *In* British Astronomical Association, *London*. Journal, v. 20, May 1910: 439. QB1.B75, v. 20

Letter to the editor calling attention to entries in the diaries of Ralph Thoresby and John Evelyn that mention the 1682 comet.

1356

Hawks, Ellison. Observations of Halley's Comet. English mechanic and world of science, v. 91, Mar. 18, 1910: 151. T1.E5, v. 91

Letter to the editor inviting observers to submit reports to him with the idea of organizing them for publication in the *English Mechanic* on a regular basis.

1357

Hayn, Friedrich. Beobachtungen des Halleyschen Kometen 1909 c am Refraktor der Leipziger Sternwarte, Öffnung 30 cm. Von Dr. Hayn und Dr.

Naumann. Astronomische Nachrichten, Bd. 187, Nr. 4466, 19. Jan. 1911: columns 25–28. QB1.A77, v. 187

Observations made Apr. 28–June 5, 1910.

1358

Heath, Mark B. Halley's Comet: an observation from South Australia—"Burnerd" objectives. English mechanic and world of science, v. 91, Mar. 25, 1910: 172. illus. T1.E5, v. 91

Letter to the editor describing, and accompanying a sketch of, the comet as seen Jan. 1 at the Adelaide Observatory.

1359

Hechler, Martin, *and* Friedhelm Hechler. Midcourse navigation for the European Comet Halley mission. *In* Spacecraft flight dynamics. Proceedings of an international symposium, 18–22 May 1981—Darmstadt, Germany. [Edited by T D Guyenne & G Lévy] Paris, European Space Agency, 1981. (ESA SP–160) p. 189–195. illus.

NASA accession no. N82–14141.

References (6): p. 195.

"The European Comet Halley mission involves a sequence of mid-course orbit corrections to remove deviations from the nominal flight path, as indicated by orbit determination. As a function of the spacecraft design, several manoeuvre execution modes are studied, and the corresponding optimization problems are discussed. For on-board propellant estimation, a simple sequential algorithm is employed. The use of these optimization and propellant budgeting methods in operations is considered."

1360

Hechler, Martin, *and* Friedhelm Hechler. The use of ground based observations of Halley's Comet in the Giotto navigation. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982*. Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 57–66.

References (4): p. 66.

Discussion: p. 66.

1361

Hecht, Heinrich A. Der schöne Halley, ein Komet, den wir mit dem Jahre 1834 wieder zu erwarten haben. Mit einer gemeinfasslichen, Jedermann verständlichen Belehrung über Kometen überhaupt. Ilmenau, B. F. Voigt, 1833. 65 p. plates.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 396 and CR. C2. 159.

A Danish translation by Jens V. Bruun, entitled *Halley, den skjønne Komet, som kan ventes at gaae forbi Solen og Jorden 1835 og 1836*, was published in Aarhus in 1834.

1362

Hedges, Kathleen F. Halley's Comet: the return of a legend. Odyssey, v. 5, Mar. 1983: 4–9, 11–13. illus. (part col.) QB46.O3a, v. 5

The front cover of the issue reproduces a painting by Bruce Bond entitled "Ye Comet Halley."

1363

Hedrick, John T. The sky for the night of May 18–19. Astronomical journal, v. 26, Sept. 13, 1910: 140. QB1.A3, v. 26

Notes the presence of a reddish color in the sky to an altitude of about 20° as seen from Georgetown, D.C., when Halley's Comet passed near the earth.

1364

Heilig, Sterling. French astronomers and Halley's Comet. Evening star (Washington, D.C.), Mar. 12, 1910, pt. 3: 3. illus. N&CPR

Adds fuel to the comet panic.

1365

Heine, Thomas T. [Der Komet kommt!] Simplicissimus, 15. Jahrg., 4. Apr. 1910: 11. col. illus. AP105.S5, v. 15

A pair of cartoons. One shows a uniformed government official and a priest looking at the comet, which has the shape of a dog with a long wavy tail. The caption reads, "In Deutschland trifft der Komet seine alten Freunde Bürokratius und Klerikus noch unverändert an, wie er sie im Jahre 1835 verlassen hat. Vor Freude über das Wiedersehen wedelt er mit dem Schweif." The other shows an elderly gentleman waving goodbye to a monkey who sails off in a balloon; the comet frowns low on the horizon. The caption reads, "Damit die menschliche Rasse nach Schluss des Weltuntergangs wiederhergestellt werden kann, lässt Professor Häckel einen Affen im Luftballon in den Weltraum aufsteigen." These are among a number of satirical drawings, concerned mostly with German politics, in this special comet issue. Three are reproduced with English captions in the *Literary Digest*, v. 40, May 14, 1910, p. 967 (AP2.L58, v. 40).

1366

[Heis, Eduard] Berichtigung. Wochenschrift für Astronomie, Meteorologie und Geographie, n.F., 2. Jahrg., 23. März 1859: 93–94. QB1.W8, 1859

An attempt to refute the legend, propagated by Arago among others, that Pope Calixtus III ordered prayers against the comet in 1456 and excommunicated it along with the Turks who were then besieging Belgrade.

1367

Heis, Eduard. Der im October 1835 sichtbare Halley'sche Komet in seiner wahren und scheinbaren Bahn während der Jahre 1835 und 1836. Gemeinfasslich dargestellt. Köln, M. DuMont-Schauberg, 1835. 36 p. fold. plates.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 164.

One plate shows the comet's path among the constellations, Jan. 1835–Jan. 1837, and the other diagrams the relative positions of the earth and the comet in their orbits, May 1835–May 1836.

1368

Het Helderheidsverloop der komeet van Halley. Natuur, 31. jaarg., 15 apr. 1911: 126. Q4.N2, 1911

J. Corver of The Hague, noting that the comet appeared less bright during its 1910 return, developed a formula for predicting its photometric magnitude based on its distances from the earth and the sun.

1369
Hell, Maximilian. Observationes cometae anni 1759. mense Majo Vindobonae habitae. *In his* Observationes astronomicae anni 1759. factae in observatorio Caes. Regio. publico ejusdem universitatis adjecta methodo observandi cometas ope micrometri filaris. Vindobonae, J. T. Trattner [1759?] p. 6–16. fold. plate.

Observations were made May 2, 3, 15, 19, 20, 21, 22, 25, and 28. The plate is bound at the end of the *Observationes Astronomicae*, which forms a separately paged part of *Ephemerides Astronomicae Anni Bissexti 1760. ad Meridianum Vindobonensem.*

1370
Hellmich, R., *and* Horst U. Keller. Coma opacity and surface contrast. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP–174) p. 41–46. illus.

NASA accession no. N82–23100.

References (8): p. 45–46.

"Parameters are derived which describe the visibility of the cometary nucleus within the dust coma . . . During the Giotto encounter with comet Halley the contrast on the nuclear surface may be somewhat impaired, [but] the shape and size of the nucleus will be discernable even under adverse circumstances."

1371
Hellmich, R., *and* Horst U. Keller. Definition of model parameters and numerical flyby simulations. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP–174) p. 31–39. illus.

NASA accession no. N82–23099.

References (11): p. 39.

Presents a model of a cometary dust halo from which dust fluxes and fluences occurring during the Giotto flyby are calculated.

1372
Hellmich, R., *and* Horst U. Keller. On the visibility of nuclei of dusty comets. Icarus, v. 47, Sept. 1981: 325–332. illus. QB1.I3, v. 47

A paper presented at IAU Colloquium 61, "Comets: Gases, Ices, Grains, and Plasma," held at Tucson, Arizona, Mar. 11–14, 1981.

References (9). p. 332.

"The problem of visibility of a cometary nucleus is discussed in general terms for single scattering by dust grains. The ratio of radiation scattered in the dust column above the surface and that reflected from the nucleus determines the visibility of features on the nuclear surface. A contrast parameter characterizing the ratio of radiation coming from the nuclear surface and that of the nuclear vicinity describes the visibility of the full nucleus against the dust fore- and background. These quantities and the intensity distribution of scattered solar radiation across the nucleus and its vicinity are calculated for the case of comet Halley at a helicocentric distance of 0.9 AU after perihelion (Giotto encounter)."

1373
Hemmy, A. S. The earth and comets' tails. Nature, v. 83, June 16, 1910: 459. Q1.N2, v. 83

Describes observations of the tail of Halley's Comet made before dawn on May 19 at Lahore.

1374
Henbest, Nigel. The comet is coming! New scientist, v. 90, June 4, 1981: 631. illus. Q1.N52, v. 90

Reviews Nigel Calder's BBC2 television program, shown on May 25, noting that the format represents a "radical departure" from the author's previous popularizations: "Calder now sees a need for TV science to be light-hearted."

1375
Henderson, Ebenezer. [Tables of Halley's Comet] Mechanics' magazine, v. 23, Aug. 29, 1835: 428–430. T1.I38, v. 23

Includes somewhat defective ephemeris for the period Aug. 1, 1835–Feb. 15, 1836, based on that published in the *Nautical Almanac*. Criticisms by "Mohawk" and Henderson's reply appear in the Sept. 19 issue, p. 490–492.

1376
Henderson, Thomas. Observations of the Comet of Halley. *In* Edinburgh. Royal Observatory. Astronomical observations. v. 1. From October 1834 to December 1835. Edinburgh, Printed by Neill and sold by A. and C. Black, Booksellers to Her Majesty for Scotland, MDCCCXXXVIII. p. 185–188. QB4.E23, v. 1

Observations made Aug. 28 and 29, Sept. 23–26, and Oct. 1, 1835, with a portable achromatic telescope of 3½ inches aperture.

1377
Hendrie, Michael J. The return of Halley's Comet. Spaceflight, v. 24, June 1982: 242–248. illus., port. TL787.B725, v. 24

Reviews the comet's history and plans for observing the 1986 apparition.

1378
Henkel, Frederick W. Halley's Comet. English mechanic and world of science, v. 91, May 20, 1910: 362. T1.E5, v. 91

Answers a query from "Puzzled" in the May 13 issue (no. 722, p. 342) about the comet's period. Another reply, sent by A. G. Blake, appears in the May 27 issue (p. 381).

1379
Henkel, Frederick W. Halley's Comet. Knowledge & scientific news, new ser., v. 4, Mar. 1907: 57–59. illus. Q1.K7, n.s., v. 4

Reprinted in *Popular Astronomy*, v. 15, Apr. 1907, p. 238–245 (QB1.P8, v. 15), and briefly reported in *Nature*, v. 75, Apr. 25, 1907, p. 616 (Q1.N2, v. 75).

See also Henkel's letter to the editor, "Halley's Comet and Pope Calixtus," in the June 1907 issue of *Knowledge*, p. 140.

1380

Hennert, Johann F. Lettre à messieurs les auteurs de la Bibliothèque des sciences, & des beaux-arts, à l'occasion de la comète, qui a été observée aux mois de mars, d'avril & may. Bibliotheque des sciences et des beaux arts, t. 11, avril/juin 1759: 446–459. AP25.B44, v. 11

Includes, in tabular form, observations made by Dunn in London on May 1–7 and May 11–16, and by Klinkenberg on May 1–3, 9, 14, 16, 19, and 21.

1381

Hennig, C. A. Die grosse Konfusion am 18. Mai 1910. Meggendorfer-Blätter, 81. Bd., 3. Mai 1910: 96a–97. illus.

Cartoon showing a variety of people performing very uncharacteristic actions on doomsday.

1382

Hennig, Richard. Der Halleysche Komet als Ursache der Sage vom Luftkampf der Geister nach der Hunnenschlacht. Himmelswelt, 44. Jahrg., Sept./Okt. 1934: 174–176. DN-Ob

Bibliographic footnotes.

Refers to the legend that after the battle in Gaul where Attila was defeated in 451, the ghosts of the slain warriors continued to fight for three days and nights.

1383

Hennig, Richard. Kometen und Nordlichten im Volksaberglauben. Zur Wiederkehr des Halleyschen Kometen. Die Gartenlaube, 24. Feb. 1910: 144–147. illus. AP30.G2, 1910

1384

Hennig, Richard. Kometensommer. Die Woche, 12. Jahrg., 25. Juni 1910: 1074–1076. Micro 27817

1385

Henry, Joseph. [Letter, 1835 Oct. 19] To James Henry. *In his* The papers of Joseph Henry. Editor: Nathan Reingold. v. 2. November 1832–December 1835, the Princeton years. City of Washington, Smithsonian Institution Press, 1975. p. 463–464. Q113.H43, v. 2

The final paragraph deals with Halley's Comet and its interest to his brother-in-law, the astronomer, Stephen Alexander, who made numerous observations that apparently were not published.

1386

Hepites, Stefan C. Asupra cometelor şi despre Cometa Halley. *In* Academia română, *Bucharest*. Analele. ser. 2, t. 32; 1909/10. Partea administrativă şi desbaterile. Bucureşti, Instit. de Arte Grafice "Carol Göbl," 1910. p. 125–134. AS345.B4, s. 2, v. 32

1387

Hepperger, Josef von. Beobachtung des Halleyschen Kometen auf dem Sonnwendstein. Astronomische Nachrichten, Bd. 184, Nr. 4414, 27. Mai 1910: columns 369–372. QB1.A77, v. 184

Observations made May 12–19. A correction by J. Rheden was published in Bd. 185, Nr. 4431, 4. Aug. 1910, column 244.

1388

Hepperger, Josef von. Planeten- und Kometenbeobachtungen an der k.k. Wiener Sternwarte. Astronomische Nachrichten, Bd. 188, Nr. 4494/4495, 5. Mai 1911: columns 81–106. QB1.A77, v. 188

Includes observations of Halley's Comet made Jan. 8–June 12, 1910 (columns 93–96). Comparison stars are listed in column 100, and comments on the observations by H. Jaschke appear in columns 99–104. Corrected data for Jan. 8 and May 31 are published in Bd. 203, Nr. 4851, 7. Juli 1916, column 52. See also the report of an observation made Dec. 6, 1909, in Bd. 184, Nr. 4412/4413, 19. Mai 1910, columns 337–338.

1389

Herlitz, David. Kurtze aber trewhertzige Erklerung des geschwäntzten newen Sterns oder Cometen so sich im September dieses 1607. Jahrs hat sehen lassen. Lübeck, Gedruckt durch J. Witten [1607?] 40 leaves. illus.

Held by the Bibliothèque nationale (Paris) under shelfmark V. 12172 and by the Herzog August Bibliothek Wolfenbüttel under shelfmark 43 Astron. (7).

1390

Herrmann, Dieter B. Auf den Spuren von Halley: Porträt eines Kometen. *In his* Zu den Sternen empor. Berlin-Treptow, 1980. (Berlin. Archenhold Sternwarte. Vorträge und Schriften, Nr. 59) p. 24–28. illus.

Based on a talk broadcast over Radio DDR II, Studio 70.

1391

Herschel, *Sir* John F. W. [Extract relating to Halley's Comet from a letter to Mr. Baily dated Feb. 3, 1836] *In* Royal Astronomical Society. Monthly notices, v. 3, Apr. 1836: 190. QB1.R7, v. 3

States that the comet keeps him up "*all* night and *every* night ... It is altogether the most beautiful thing I ever saw in a telescope." See also extracts from subsequent letters to Mr. Baily and Capt. Smyth published in the June 1836 issue, p. 198.

1392

Herschel, *Sir* John F. W. Observations de la comète de Halley, faites au Cap. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 3, 31 oct. 1836: 505–506. Q46.A14, v. 3

Extract from a letter to Arago.

1393

Herschel, *Sir* John F. W. Observations of Halley's Comet, with remarks on its physical condition, and that of comets in general. *In his* Results of astronomical observations made during the years 1834, 5, 6, 7, 8, at the Cape of Good Hope. London, Smith, Elder, 1847. p. 393–413. plates. QB3.H52

Three plates reproduce 13 sketches made by Herschel.

1394
Herschel, *Sir* John F. W. Observations of the Comet of Halley, after the perihelion passage in 1836: made at Feldhausen, Cape of Good Hope. In a letter addressed to F. Baily, Esq. President of this Society. *In* Royal Astronomical Society. Memoirs. v. 10. London, J. Weale, 1838. p. 325–334. QB1.R5, v. 10

The letter, dated Oct. 18, 1836, and read Jan. 13, 1837, is accompanied by a list of comparison stars and tabulated observations covering the period Jan. 25–May 5, 1836. A brief report appears in the Society's *Monthly Notices*, v. 4, Jan. 1837, p. 25 (QB1.R7, v. 4).

1395
Herschel, *Sir* John F. W. On Halley's Comet. *In* British Association for the Advancement of Science. Report of the eighth meeting held at Newcastle in August 1838. [Notices and abstracts of communications] London, J. Murray, 1839. p. 19–20 (2d group) Q41.B8, 1838

A very similar version appears in the *American Journal of Science and Arts*, v. 35, no. 2, 1839, p. 285–287 (Q1.A5, v. 35).

1396
Herz, Norbert. Komet (19); der Halley'sche Komet. *In* Valentiner, Wilhelm, *ed.* Handwörterbuch der Astronomie. 2. Bd. Breslau, E. Trewendt, 1898. p. 68–69. QB14.V15, v. 2

Additional references occur sporadically throughout the section on comets (p. 51–103) and include a summary of Bessel's 1835 observations on p. 57–58 and copies of four of his sketches (plate III).

1397
Herzberg Institute of Astrophysics. Meteors and meteor spectra analysis. Ottawa, 1982. [27] p. illus. Sci RR

NASA accession no. N83-14040—N83-14043.

Contents: Meteors and meteor spectra analysis; final report. 1982. [9] p.—Progress report on the research study of meteors and meteor spectra analysis. 1981. [11] p.—Brief abstract of the final report on the research study. 1982. 1 p.—Current trends in meteor spectroscopy. 1982. 6 p.

All documents signed Peter M. Millman.

Includes bibliographic references.

Of the meteor spectra studied—eight Geminid, six Orionid, and three Eta Aquarid—the latter two sets were "chosen for early analysis because of the current interest in all physical and chemical data relating to Comet Halley."

1398
Hevelius, Johannes. Excerpta ex epistola Dn. Joannis Hevelii, Gedano Lipsiam missa d. 17. Nov. st. n. a. 1682. II. De cometâ anno 1682 mense Augusto & Septembri viso. Acta eruditorum, Dec. 1682: 389–391. plate.

Hevelius first saw the comet on Aug. 25 and then watched it daily through Sept. 17 whenever the weather permitted. Tables on p. 390 give the comet's position and distance traveled (in degrees and minutes) for Aug. 26, 27, 30, and 31, and Sept. 1, 3, 6, 8, 9, 10, 12, and 13. An engraving depicts the comet's form and shows a jet curving back from the nucleus.

1399

Hevelius, Johannes. Extract of a letter from Mr. Hevelius; being observations by him made at Dantzick, of the comet which began there to appear, Aug. 16. 1682. *In* Royal Society of London. Philosophical transactions, v. 13, Jan. 1682/3: 16–19. illus. Q41.L8, v. 13 Rare Bk. Coll.

In Latin.

The author's drawing of the comet is reproduced at the bottom of a plate facing the first page of the issue.

1400

Hevelius, Johannes. Historiola cometae anni 1682. *In his* Annus climactericus; sive, Rerum uranicarum observationum annus quadragesimus nonus. Gedani, Sumptibus auctoris, Typis D.-F. Rhetii, Anno M DC LXXXV. p. 120–129. QB29.H4 Rare Bk. Coll.

1401

Hevelius, Johannes. Liber duodecimus, exhibens omnium cometarum, à mundo condito hucusqꝫ, ab historicis, philosophis, & astronomis annotatorum historiam. *In his* Cometographia, totam naturam cometarum. Gedani, Auctoris typis, & sumptibus, imprimebat S. Reiniger, Anno M DC LXVIII. p. 791–913. QB721.H5 Rare Bk. Coll.

The following possible and certain returns of Halley's Comet are among those recorded, though the dates vary in some cases from those now accepted:

Anno Christi 66 vel 68: p. 804;
Anno Christi 217 vel 218: p. 805;
Anno Christi 684: p. 813;
Anno Christi 761: p. 814;
Anno Christi 837: p. 815;
Anno Christi 908 circiter vel 912: p. 816–817;
Anno Christi 1066: p. 819–820;
Anno Christi 1145: p. 823;
Anno Christi 1222: p. 825;
Anno Christi 1301: p. 828;
Anno Christi 1456: p. 835–836;
Anno Christi 1531: p. 845–846; and
Anno Christi 1607: p. 871–873.

References to the apparitions of 1531 and 1607 occur elsewhere in the volume, most frequently in books 8 and 9. The comet of 1607 is among those portrayed in Figure L (facing p. 452).

Characteristics of the comets described in the text are given in tabular form on p. 901–913.

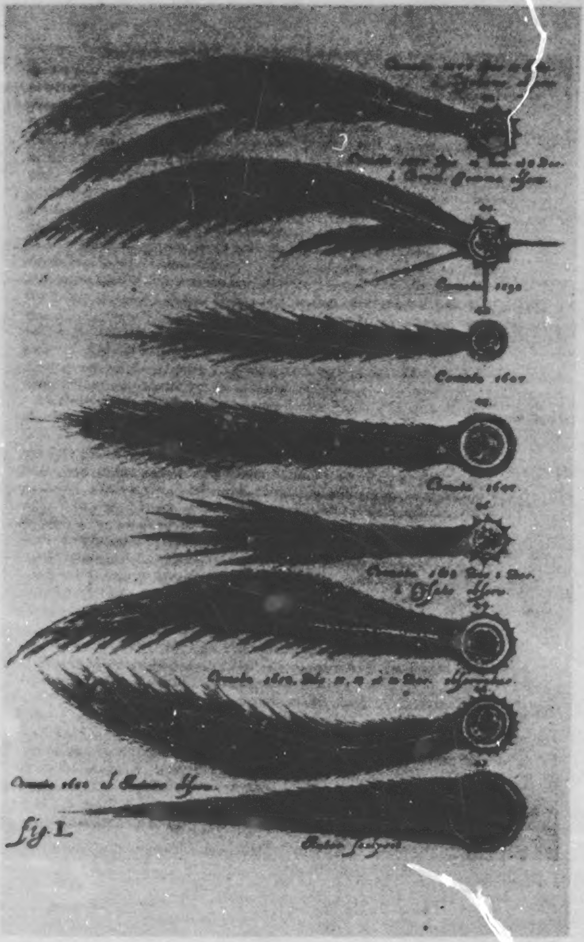
1402

[Heward, Edward V.] [A famous comet] Quarterly review, v. 188, July 1898: 113–138. AP4.Q2, v. 188

1403

Heward, Edward V. The story of Halley's Comet. Nineteenth century and after, v. 66, Sept. 1909: 509–526. AP4.N7, v. 66

Reprinted in the *Living Age*, v. 263, Oct. 9, 1909, p. 67–81 (Micro 32984).



In his weighty *Cometographia*, on plate L, facing p. 452, Hevelius shows two views of the historic comet of 1577, which Tycho Brahe demonstrated to be more distant than the moon, thereby overthrowing the long-accepted teaching of Aristotle that comets were atmospheric phenomena. The two drawings show the change in the comet's tail that took place between Nov. 13 and Nov. 28; the first observation is ascribed to Tycho, and the later one, to Cornelius Gemma. The third sketch portrays the comet of 1590, discovered and observed by Tycho; next comes the 1607 apparition of Halley's Comet, observed by Kepler and Longomontanus; the fifth represents the briefly seen comet of 1647; the sixth and seventh depict the splendid comet of 1618, observed by Cysat and many others, and regarded by some as portending the Thirty Years' War; and the last, the comet of 1652, carefully observed by Hevelius himself.

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1404

Hicks, E. Rupert. Philips' model of Halley's Comet, earth, and sun. London, G. Philip [1910] broadside.

Held by the British Library.

Notices appear in the *Journal* of the British Astronomical Association, v. 20, Mar. 1910, p. 323 (QB1.B75, v. 20), the *Spectator*, v. 104, Apr. 16, 1910, p. 632 (AP4.S7, v. 104), and *Nature*, v. 83, Apr. 21, 1910, p. 230 (Q1.N2, v. 83).

1405

Hicks, Irl R. The comet at the crisis. Word and works, v. 45, May 1910: 4–5. illus. AP2.W748, v. 45

1406

Hill, R. Jerome. Waiting for the end of the world. Harper's weekly, v. 54, May 14, 1910: 21. illus. AP2.H32, v. 54

The drawing shows a couple seated on a rock islet; a rowboat is beached at left. The young man and woman are silhouetted against the light of a large comet seen in the night sky.

1407

Hillebrand, Karl. Über den Kometen Halley und seine letzte Erscheinung. *In* Naturwissenschaftlicher Verein für Steiermark, *Graz*. Mitteilungen, Bd. 47, Heft 2, 1910: 345–361. Q44.S8, v. 47

1408

Hind, John Russell. The comet of Halley. *In his* The comets: a descriptive treatise upon those bodies. London, J. W. Parker, 1852. p. 35–57. QB721.H66

1409

Hind, John Russell. Comète de l'année 66. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 26, 21 fév. 1848: 257. Q46.A14, v. 26

Part of a letter to Le Verrier. Suggests that two objects dated A.D. 66 in Biot's "Catalogue des étoiles extraordinaires observées en Chine depuis les temps anciens jusqu'à l'an 1203 de notre ère," published in the "Additions" to the *Connaissance des temps* for 1846 (Paris, Bachelier, 1843. QB8.F9, 1846), were actually appearances in different parts of the sky of a comet and offers orbital elements for it. Hind later concluded that it might have been an appearance of Halley's Comet.

1410

Hind, John Russell. On the past history of the Comet of Halley. *In* Royal Astronomical Society. Monthly notices, v. 10, Jan. 1850: 51–58. QB1.R7, v. 10

Hind appears to have been the first to show that comets recorded in 12 B.C. and A.D. 66, 141, 218, 295, 373, 530, 684, 912, 1066, 1145, and 1301 were probably apparitions of Halley's Comet.

Some of his findings are discussed in a short article in *Scientific American*, v. 102, Apr. 23, 1910, p. 336 (T1.S5, v. 102).

1411

Hintsches, Eugen. Experimente für Kometen-Sonde ausgewählt. MPG Spiegel, Nr. 2, 1981: 1–2. illus. DLC

On the 10 experiments planned for the Giotto mission.

1412

Hintsches, Eugen. NASA und ESA planen Flüge zu Kometen. Astronautik, 15. Jahrg., Heft 3, 1978: 84. TL787.A849, v. 15

Includes news of the European Space Agency's plans for flying a space probe, to be launched by the Ariane rocket, through the tail of Halley's Comet.

1413

Hintsches, Eugen. Rendezvous mit einem schmutzigen Eisberg. MPG Spiegel, Nr. 2, 1978: 7–9. illus.

On plans for the NASA/ESA joint mission.

1414

Hipp, Karl F. Dissertatio brevis de cometis. Hamburgi, Typis descripsit I. A. Meissner, 1835. 12 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 165.

Bibliographic footnotes.

1415

Hirao, Kunio, *and* Hiroki Matsuo. Japanese Halley exploration project. Tokyo, Institute of Space and Astronautical Science [1982] 5 p. illus. (IAF paper 82–191)

AIAA accession no. A82–46979.

Presented at the 33d congress of the International Astronautical Federation, Sept. 27–Oct. 2, 1982, in Paris.

Planet-A, Japan's first interplanetary mission,will be launched in Aug. 1985 and fly past Halley's Comet near its descending node early in Mar. 1986. The two scientific instruments to be carried are a vacuum ultraviolet TV camera and a solar wind particle analyzer.

1416

Hirao, Kunio. Planet-A mission to Halley. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 91–95. illus. QB723.H2R4 1983

References (7): p. 95.

"One of the main objectives of the VUV [vacuum ultraviolet] imaging of the Planet-A is to observe the formation and decaying processes of the hydrogen coma of the comet continuously. By this observation, the change of the mechanism of hydrogen and the interaction between hydrogen coma and solar wind can be studied."

1417

Hirao, Kunio, *and* E. Kaneda. Scientific instrumentation of Planet-A VUV imaging of the hydrogen coma of Halley. *In* Advanced space instrumen-

tation in astronomy. Proceedings of symposium 4 of the COSPAR twenty-fourth plenary meeting held in Ottawa, Canada, 16th May–2nd June 1982. Edited by R. M. Bonnet. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 4) p. 167–169. illus.
References (6): p. 169.

1418
Hirayama, Kiyotsugu. Halley's Comet in Japanese history. Observatory, v. 33, Mar. 1910: 130–133. QB1.O2, v. 33
A short summary appears in *Nature*, v. 83, Mar. 31, 1910, p. 140 (Q1.N2, v. 83).

1419
Hirayama, Kiyotsugu. On the comets of A.D. 373 and 374. Observatory, v. 34, May 1911: 193–199. QB1.O2, v. 34
Argues that the comet of 374, rather than that of 373, was Halley's.

1420
Histoire de la marche des comètes, et en particulier de celle de Halley. Revue britannique (Paris), 3. sér., t. 14, avril 1835: 391–398.
AP20.R253, s. 3, v. 14

1421
[Historical events that occurred during previous returns of Halley's Comet] Observatory, v. 32, Nov. 1909: 444–445. QB1.O2, v. 32
A list copied from the *Daily Mail* of Sept. 16.

1422
History and ephemeris of Halley's Comet. Pacific marine review, v. 7, May 1910: 13, 15. illus. VK1.P2, v. 7
The ephemeris provides data every four days during the period Mar. 11–May 30. Illustrative diagrams and a table of the rising and setting of the comet are reprinted from the Jan. and Apr. 1910 issues of the *Monthly Evening Sky Map*.

1423
History of the late comet. Gentleman's magazine, v. 29, Nov. 1759: 521–524.
AP4.G3, v. 29 Rare Bk. Coll.
Signed Astrophilus.
Published also in the *Scots Magazine*, v. 21, Nov. 1759, p. 573–577 (AP3.S35, v. 21).
A German translation, "Geschichte des Kometen, der im Anfange des Jahres 1759. gesehen worden," appears in *Hamburgisches Magazin*, 24. Bd., 4. Stück, 1760, p. 385–396 (Q3.H3, v. 24 Rare Bk. Coll.).

1424
Ho, Peng Yoke. Ancient and mediaeval observations of comets and novae in Chinese sources. *In* Vistas in astronomy. v. 5. New York, Pergamon Press [1962] p. 127–225. illus. QB3.V512, v. 5
References (35): p. 225.
Includes an indexed set of seven star maps showing the Chinese asterisms and star names against the outlines of modern constellations.

Appearances of comets that have been tentatively or certainly identified as Halley's Comet are discussed in the following entries:
13: 467 B.C.;
19: 240 B.C.;
25: 162 B.C.;
47: 87 B.C.;
61: 12 B.C.;
78: A.D. 66;
100: A.D. 141;
122: A.D. 218;
156: A.D. 295;
175: A.D. 374;
204: A.D. 451;
217: A.D. 530;
237: A.D. 607;
258: A.D. 684;
273: A.D. 760;
291: A.D. 837;
325: A.D. 912;
350: A.D. 989;
380: A.D. 1066;
406: A.D. 1145;
425: A.D. 1222;
446: A.D. 1301;
475: A.D. 1378;
517: A.D. 1456; and
547: A.D. 1531.

1425
Ho, Peng Yoke, *and* Tian-Se Ang. Chinese astronomical records on comets and 'guest stars' in the official histories of Ming and Ch'ing and other supplementary sources. Oriens extremus, 17. Jahrg., Dez. 1970: 63–99.
DS501.O67, v. 17

Includes bibliographic references.

Appearances of Halley's Comet (not always so identified) are treated in the following entries:
5: 1378;
25: 1456;
50: 1531;
75: 1607;
89: 1682;
101 (and possibly 102): 1759; and
128: 1910.

Information for the only 1835 comet is insufficient to identify it with P/Halley.

1426
Hoagland, Richard C. Halley: one more option. Star & sky, v. 2, Sept. 1980: 51.
DN-Ob

Proposal for a Halley intercept mission involving a solar sail that could be launched as late as 1984.

1427

Hoagland, Richard C. Rendezvous in 1985. Analog science fiction/science fact, v. 95, Sept. 1975: 59–76. illus. PZ1.A1A48, v. 95

Discusses proposals for comet exploratory missions to rendezvous with Encke's Comet in 1980 and Halley's Comet in 1985.

1428

Hodges, Henry C. Halley's Comet. Stellar ray, v. 24, Mar. 1910: 244–246. BF1001.S95, v. 24

In the June issue (p. 339–341), under the title "Halley and His Comet," is reprinted the *Daily Telegraph*'s report of the lecture given by Prof. Turner on Feb. 18 at the Royal Institution.

1429

Högner, Wolfgang, *and* Nikolaus B. Richter. Isophotometrischer Atlas der Kometen. T. 1. Mit 90 Bildtafeln, Erläuterungen und Tabellen. Isophotometric atlas of comets. pt. 1. With 90 plates, comments and tables. Leipzig, J. A. Barth, 1969. 10 p. and 90 plates in case. QB722.H6, v. 1 Spec. Format

Text in German and English.

Halley's Comet is represented by five photographs taken May 24, 28, 30, and 31, and June 3, 1910, reproduced on plate G-a. The corresponding isophotometric diagrams are on plates LV–LVI (large-scale) and LXI (small-scale).

1430

Hoek, M. J. van den. The treatment of the problems due to hypervelocity impact during a fast fly-by (57 km/s) of Halley's Comet. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 121–129. illus.

NASA accession no. N80–22218.

References (15): p. 129.

1431

Hoffmann, Otto. Halley üstököse és földünk sorsa. Budapest, Athenaeum, 1910. 16 p.

1432

Hoffmann, Otto. [Halleys Komet] Prometheus, 18. Jahrg., 24. Okt. 1906: 60–63. illus. T3.P9, v. 18

See also this author's report, "Die Kometen des Jahres 1910," in 22. Jahrg., 4. März 1911, p. 347–348, which includes a paragraph and two pictures relating to Halley's Comet.

1433

Hoffmeister, Cuno. Endgültige Vergleichung der Bahnelemente der Mai-Aquariden und des Halleyschen Kometen. Astronomische Nachrichten, Bd. 196, Nr. 4698, 5. Dez. 1913: columns 309–314. QB1.A77, v. 196

1434

Hoffmeister, Cuno. Über den Zusammenhang der Mai-Aquariden mit dem Halleyschen Kometen. Astronomische Nachrichten, Bd. 191, Nr. 4573, 21. Mai 1912: columns 251–252. QB1.A77, v. 191

1435

Holetschek, Johann. Bemerkungen und Berichtigungen zur Cometenliteratur und namentlich zu den Bahnberechnungen einiger älteren Cometen. Astronomische Nachrichten, Bd. 143, Nr. 3416, 7. Apr. 1897: columns 113–122. QB1.A77, v. 143

Just under half the article deals with early appearances of Halley's Comet, chiefly those of A.D. 66, 451, 837, and 989. Most of the text is reprinted in *Jahrbuch der Astronomie und Geophysik*, 8. Jahrg., 1897, p. 34–39 (Leipzig, E. H. Mayer, 1898. Q9.J13, v. 8). A short discussion of the comet's earlier appearances, based on this study, appears in *Jahrbuch der Erfindungen*, 33. Jahrg., 1897, p. 69–70 (Leipzig, Quandt & Händel. Q9.J15, 1897).

1436

Holetschek, Johann. Beobachtungen und Bemerkungen über die Helligkeit des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 185, Nr. 4433, 11. Aug. 1910: columns 271–276. QB1.A77, v. 185

1437

Holetschek, Johann. Ephemeriden zur Aufsuchung des Halleyschen Kometen im Herbst 1909. Astronomische Nachrichten, Bd. 181, Nr. 4330, 12. Juni 1909: columns 157–160. QB1.A77, v. 181

Three sets of data for the period Aug. 13–Nov. 11 are given, one based on a perihelion date (T) of May 16.45, 1910, and the others on T = ±30 days.

An article with the same title in *Sirius*, 42. Bd., Aug. 1909, p. 182, includes the ephemerides and quotes some of Holetschek's accompanying remarks.

1438

Holetschek, Johann. Der Halleysche Komet seit 1456. Österreichische Rundschau, Bd. 23, 1. Juni 1910: 374–378. AP30.O3, v. 23

1439

Holetschek, Johann. Neue Ephemeriden zur Aufsuchung des Halley'schen Kometen bei seiner bevorstehenden Wiederkehr. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse.* Sitzungsberichte, 117. Bd., Abt. IIa, Mai 1908: 545–552.

Ephemeris covers the period Nov. 1, 1907–Jan. 30, 1910.

An abridgment appears in the division's *Anzeiger*, 45. Jahrg., 9. Apr. 1908, p. 180–181 (AS142.V315, v. 45).

1440

Holetschek, Johann. Planeten- und Kometen-Beobachtungen am Fraunhofer'schen Refraktor von 16.2^{cm} (6 Par. Zoll) Öffnung von 1903 bis Ende Juni 1910. *In* Vienna. Universität. *Sternwarte.* Annalen der k.k. Universitäts-Sternwarte in Wien. 22. Bd. Wien, J. N. Vernay, 1912. p. 1–64. QB4.V67, v. 22

"Komet 1909c (1910 II)": p. 59–64. The observations cover the period Dec. 15, 1909–June 21, 1910.

1441
Holetschek, Johann. Über die Helligkeit und Schweifentwicklung des Halleyschen Kometen in der gegenwärtigen Erscheinung. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse.* Anzeiger, 47. Jahrg., 9. Juni 1910: 232–235. AS142.V315, v. 47

1442
Holetschek, Johann. Über die Länge des Schweifes des Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4404, 16. Apr. 1910: columns 205–206. QB1.A77, v. 184
—— ——— Zusatz. Astronomische Nachrichten, Bd. 185, Nr. 4420, 17. Juni 1910: columns 53–56. QB1.A77, v. 185

Gives the mean and maximum tail lengths, in AU, observed in 1456, 1531, 1607, 1682, 1759, and 1835.

1443
Holetschek, Johann. Über die mutmassliche Zeit der Wiederauffindung des Halley'schen Kometen bei seiner nächsten Erscheinung. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse.* Sitzungsberichte, 115. Bd., Abt. IIa, Mai 1906: 683–696. AS142.V311, v. 115, Abt. IIA

An abridgment appears in the division's *Anzeiger*, 43. Jahrg., 5. Juli 1906, p. 322–324 (AS142.V315, v. 43), which is reprinted in *Jahrbuch der Astronomie und Geophysik*, 17. Jahrg., 1906, p. 43–44 (Leipzig, E. H. Mayer, 1907. Q9.J13, v. 17).

1444
Holetschek, Johann. Über die mutmasslichen Helligkeitsverhältnisse des Halleyschen Kometen bei seiner bevorstehenden Erscheinung. Astronomische Nachrichten, Bd. 178, Nr. 4254, 13. Juni 1908: columns 99–102. QB1.A77, v. 178

Includes a search ephemeris with three sets of data for the period Oct. 2, 1908 – Mar. 1, 1909, one based on a perihelion date (T) of May 16.45, 1910, and the others on T = ±30 days. Magnitude estimates for the period Oct. 2, 1908–Oct. 2, 1909, are based on a perihelion date of Apr. 8, 1910. Crommelin reports on the article and provides a slightly different ephemeris for Oct. 2, 1908 – Mar. 1, 1909, based on T = Apr. 10, 1910, in the *Observatory*, v. 31, July 1908, p. 291–292 (QB1.O2, v. 31).

1445
Holetschek, Johann. Über eine Unterscheidung von vier Stufen, welche die Helligkeit der Kometen erreichen kann. Astronomische Nachrichten, Bd. 185, Nr. 4432, 9. Aug. 1910: columns 257–260. QB1.A77, v. 185

Distinguishes four stages in the luminosity of comets and concludes that Halley's Comet in its 1910 return reached the second of these stages.

1446
Holetschek, Johann. Untersuchungen über die Grösse und Helligkeit der Kometen und ihrer Schweife. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse.* Denkschriften. 63., 77., 88., 93.–94. Bde. Wien, Aus der Kaiserlich-königlichen Hof- und Staatsdruckerei, 1896–1918. p. 317–574; p. [503]–609; p. [745]–860; p. [201]–305; p. [375]–488.

Contents: 1. Die Kometen bis zum Jahre 1760.—2. Die Kometen von 1762 bis 1799.—3. Die Kometen von 1801 bis 1835 und auszugsweise auch noch die helleren bis 1884.—4. Die helleren periodischen Kometen.—5. Die minder hellen periodischen Kometen.

Includes bibliographic references.

The following appearances of Halley's Comet are treated in pt. 1:
12 B.C., p. 352;
A.D. 66, p. 352–354;
A.D. 141, p. 354–355;
A.D. 218, p. 355–356;
A.D. 295, p. 357;
A.D. 373, p. 357;
A.D. 451, p. 357–358;
A.D. 530, p. 358;
A.D. 608, p. 363;
A.D. 684, p. 363–364;
A.D. 760, p. 364–365;
A.D. 837, p. 366–371;
A.D. 912, p. 371;
A.D. 989, p. 372–374;
A.D. 1066, p. 375–376;
A.D. 1145, p. 379–380;
A.D. 1223, p. 380;
A.D. 1301, p. 385–388;
A.D. 1378, p. 392–393;
A.D. 1456, p. 399–401;
A.D. 1531, p. 418–419;
A.D. 1607, p. 446–448;
A.D. 1682, p. 490–492;
A.D. 1759, p. 550–557; and
A.D. 1835, p. 562–566.

Also in pt. 1 is a section entitled "Für den Halley'schen Kometen lässt sich aus den bisherigen Erscheinungen eine Abnahme oder überhaupt eine Veränderlichkeit seiner Mächtigkeit nicht nachweisen" (p. 566–569).

Two sections in pt. 4—"Revision einiger Erscheinungen des Halley'schen Kometen vor 1301" (p. 202–209) and "Die Erscheinung des Halley'schen Kometen von 1910 und ihre Vergleichung mit früheren Erscheinungen" (p. 209–226)—and one in pt. 5—"Nachtrag zur letzten Erscheinung des Halley'schen und zu der des Encke'schen Kometen" (p. 376–378)—also relate to Halley's Comet.

Summaries of the full papers appear in the division's *Anzeiger*, 32. Jahrg., 24. Okt. 1895, p. 221–224; 41. Jahrg., 20. Okt. 1904, p. 314–318; 49. Jahrg., 24. Okt. 1912, p. 411–413; 52. Jahrg., 21. Okt. 1915, p. 267–270; and 53. Jahrg., 19. Okt. 1916, p. 265–268 (AS142.V315, v. 32, 41, 49, 52–53).

1447

Hollaender, Victor. Kometen-Walzer. Metropol Theater Berlin Revue 1910/11 von Julius Freund. Hurra—wir leben noch!!! Berlin, E. Bote & G. Bock [1910] 14 p. M1508 Hurra—wir leben noch

For piano.

Words are included for passages from some songs whose themes occur in the waltz.

Arrangements for orchestra, salon orchestra, and brass band were also published.

Cover design in color by Telemann.

1448

Hollaender, Victor. Kometenlied. Metropol Theater Berlin Revue 1910/11 von Julius Freund. Hurra—wir leben noch!!! Berlin, E. Bote & G. Bock [1910] 3 p. M1508 Hurra—wir leben noch

For voice and piano.

The piano score gives words for only one stanza. An unnumbered leaf (Singstimme) laid in provides the melody and words for three stanzas. The verso of this leaf contains excerpts from a collection of dances issued by the same publisher.

Cover design in color by Telemann.

1449

Hollis, Henry P. The appearance of Halley's Comet—the length of its period—comets' tails. English mechanic and world of science, v. 91, June 3, 1910: 396–397. T1.E5, v. 91

1450

Hollis, Henry P. The brightening of Halley's Comet. English mechanic and world of science, v. 90, Dec. 3, 1909: 418. T1.E5, v. 90

1451

Hollis, Henry P. Brightness of Halley's Comet. English mechanic and world of science, v. 90, Jan. 28, 1910: 607. T1.E5, v. 90

1452

Hollis, Henry P. Discovery of Halley's Comet. English mechanic and world of science, v. 90, Sept. 24, 1909: 184. T1.E5, v. 90

The news of Wolf's discovery is given in the Sept. 17 issue, p. 160.

1453

Hollis, Henry P. The earth in the comet's tail—bottled comet. English mechanic and world of science, v. 91, Apr. 8, 1910: 219. T1.E5, v. 91

1454

Hollis, Henry P. [Halley's Comet] *In his* Chats about astronomy. London, T. Werner Laurie [1909] p. 138–143. plate. DN-Ob; DWP; IdU; MiU

The frontispiece reproduces a photograph of the comet taken Sept. 23, 1909, to which reference is made on p. 207.

Copies of the U.S. edition, published by Lippincott in 1909 and reprinted in 1910, are held by MA, MB, MH, and PU.

1455

Hollis, Henry P. Halley's Comet. English mechanic and world of science, v. 89, Apr. 23, 1909: 276. T1.E5, v. 89

Answers a request from an amateur astronomer signing himself "Omega," published in the issue of Apr. 16, p. 262, for the comet's elements.

1456

Hollis, Henry P. Halley's Comet. English mechanic and world of science, v. 90, Dec. 17, 1909: 464. T1.E5, v. 90

Includes a list of 16 observations made Sept. 9–Dec. 4, 1909, at various places, with estimates of the comet's magnitude and an indication of the size of the objective used; a note on the Aug. 24 photograph of the comet taken at Helwan; and some ephemeris data.

1457

Hollis, Henry P. Halley's Comet. English mechanic and world of science, v. 92, Aug. 12, 1910: 34. T1.E5, v. 92

Briefly discusses photographs of the comet.

1458

Hollis, Henry P. Halley's Comet—its magnitude. English mechanic and world of science, v. 91, May 20, 1910: 355. T1.E5, v. 91

1459

Hollis, Henry P. Orbit of Halley's Comet. English mechanic and world of science, v. 92, Sept. 9, 1910: 134. T1.E5, v. 92

Responds to a query from "S.S." published in the Sept. 2 issue (no.189, p. 119) concerning the length of the comet's orbit.

1460

Holmes, Albert N. I saw Halley's Comet. Newfoundland quarterly, v. 74, fall 1978: 37–38. port.

1461

Holmes, Edwin. [Halley's Comet] English mechanic and world of science, v. 90, Dec. 24, 1909: 491; v. 91, June 3, 1910: 398. T1.E5, v. 90–91

Letters to the editor that include reports of observations made Dec. 8, 1909, and May 22, 1910.

1462

Holmes, Oliver W. The comet. New-England magazine, v. 2, Apr. 1832: 300–301. AP2.N38, v. 2

Describes a horrifying dream (blamed on overindulgence at supper) of what might happen if a comet collided with the earth. Beginning "The Comet! he is on his way," the poem may have been written in anticipation of the 1835 return of Halley's Comet. A somewhat abridged version—unsigned—appears in *The Yankee; or, Farmer's Almanac*, v. 3, no. 4, 1836, p. [13] (Boston, Stationers' Hall [1835] AY81.F3Y3, 1836), and it underwent some revision before being published in the 1836 and 1849 editions of Holmes' *Poems* (PS1955.A1 1836 Rare Bk. Coll. and PS1955.A1 1849 Rare Bk. Coll.).

On p. 28 of the cited almanac is another unsigned poem entitled "The Comet," the first line of which runs "He comes, the fiery monarch comes."

1463

Honnorat, Marius. Observations de la comète de Halley. Ciel et terre, 31. année, juil. 1910: 276–277. plate. QB1.C5, v. 31

The plate reproduces sketches of the comet and its head made at Barcelonnette on May 26

1464

Honold, Jacob. Kurtzer Entwurff dess neu-entstandenen Cometen, wie er sich im Monat Augusto dieses 1682. Jahrs hat sehen lassen. Ulm, Bey C. B. Kühnen sel. Erben [1682] [4] p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 311.

Text and illustration are given in *Das Weltall*, 7. Jahrg., 1. Feb. 1907, p. 132–133 (QB1.W4, v. 7).

1465

Honold, Jacob. Nvncivs siderevs aestivvs nvper in Avgvsto & svbseqvente Septembri in avrora vesperaqve visvs. Das ist: Umständlicher Bericht von dem neuen Cometen, welcher sich gegen dem Ende dess nächstverstrichnen Sommers 1682. dess Morgens und Abends hat sehen lassen. Ulm, Bey C. B. Kühnen sel. Erben [1682] 15 p. front. NIC

The plate is similar to the illustration accompanying Honold's *Kurtzer Entwurff*. The present work also includes a table with observational data for Aug. 17, 19, 21, 22, 23, 27 29, and 30, and Sept. 3, 7, and 10.

1466

Hooke, Robert. A discourse of the nature of comets. Read at the meetings of the Royal Society, soon after Michaelmas 1682. *In his* The posthumous works of Robert Hooke ... containing his Cutlerian lectures, and other discourses, read at the meetings of the illustrious Royal Society. Publish'd by Richard Waller. London, Printed by S. Smith and B. Walford (Printers to the Royal Society) at the Princes Arms in St. Paul's Church-yard, 1705. p. 194 [i.e. 149]–190. plate. Q157.H78 Rare Bk. Coll.

Hooke's observations of the 1682 appearance of Halley's Comet appear on p. 159–162. Sketches show the comet as it looked on Aug. 20, 26, and 30.

1467

Hopmann, Josef. Photometrische Untersuchungen an Kometen. III. Die Kometenkerne nach Beobachtungen und Theorie. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse.* Sitzungsberichte, 167. Bd., Abt. 2, 1./4. Heft, 1958: 53–70. illus. AS142.V311, v. 167, Abt. 2

References (16): p. 69–70.

"4. Der Halleysche Komet 1910": p. 59–62.

1468

Horner, George R. Observations of Halley's Comet. *In* British Astronomical Association, *London.* Journal, v. 21, Mar. 1911: 271–272. QB1.B75, v. 21

Letter to the editor. Observations were made Apr. 23–June 12 at Patea on the North Island of New Zealand.

1469

Hornung, Klaus, *and* S. Drapatz. Residual ionization after impact of large dust particles. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP–155) p. 23–37. illus.

NASA accession no. N81-34115.
References (16): p. 36-37.
Investigates the effects of impacts at flyby velocity.

1470
Horsewood, J. L., *and* F. I. Mann. SEP Encke-87 & Halley rendezvous studies and improved s/c model implementation in HILTOP. Final report. Part 1 of 2. Prepared for National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio. Seabrook, Md., Business and Technological Systems, 1978. 25 p. illus. (BTS-TR-78-55) NASA CR-135414) Sci RR
NASA accession no. N78-25105.
References (2): p. 25.
"Two studies were conducted to determine the performance requirements for projected state-of-the-art SEP spacecrafts boosted by the shuttle/IUS to perform a rendezvous with the comet Halley and a rendezvous with the comet Encke during its 1987 apparition. The spacecraft model of the standard HILTOP computer program was assumed. Numerical and graphical results summarizing the studies are presented."

1471
Hough, Sydney S. Observations of Comet Halley 1909 c, made at the Royal Observatory, Cape of Good Hope with the heliometer by W. Whittingdale and R. Fowler. Astronomische Nachrichten, Bd. 187, Nr. 4482, 8. März 1911: columns 353-358. QB1.A77, v. 187
Observations made Apr. 10-Aug. 7, 1910.

1472
Houllevigue, Louis. La comète de Halley. La Revue de Paris, 17. année, 15 mai 1910: 369-382. AP20.R27, v. 17

1473
Houpis, Harry L. F., *and* D. A. Mendis. The structure and development of Comet Halley's ionosphere. *In* American Astronomical Society. Bulletin, v. 12, no. 1, 1980: 437. QB1.A255, v. 12
Abstract of a paper presented at the 155th meeting of the American Astronomical Society, Jan. 13-18, 1980, at San Francisco, California.
See also the review article by these authors, "The Cometary Atmosphere and Its Interaction With the Solar Wind," in *Reviews of Geophysics and Space Physics*, v. 20, Nov. 1982, p. 885-928 (QC801.R463, v. 20).

1474
How to switch off a comet. New scientist, v. 95, Aug. 26, 1982: 542. Q1.N52, v. 95
Two radio astronomers at Jodrell Bank, Ray Norris and John E. B. Ponsonby, "say they will beam radio waves at the comet [Halley's] in an attempt to switch off its natural maser (the radio equivalent of a laser)."
Reported as " 'Kikapcsolják' a Halley-üstökös mézersugárzását?" in *Élet és tudomány*, 37. évf., 1982. X. 29., p. 1404 (Q44.E5, v. 38). See also item 2763a.

1475
Howe, Herbert A. Observations of Halley's Comet 1910 II made at the Chamberlin Observatory of the University of Denver. Astronomische Nachrichten, Bd. 200, Nr. 4784, 15. Feb. 1915: columns 121–136.
QB1.A77, v. 200

Covering the period Oct. 11, 1909–Apr. 1, 1910.

1476
Hu, Chung-wei. Halei huixing [Ha-lei hui hsing] Halley's comet. *In* Chung-kuo ta pai k'o ch'üan shu. T'ien wen hsüeh. Pei-ching, Chung-kuo ta pai k'o ch'üan shu ch'u pan she, 1980. p. 109–110. illus.
AE17.C48, v. 7 Orien China

1477
Huber, Edward D. Wideband comet camera lens design. Optical engineering, v. 20, Nov./Dec. 1981: 941–946. illus. TR692.5.S65, v. 20

References (5): p. 946.

"A quarter-meter diameter, modified Ritchey-Chrétien camera is described for spacecraft based observation of Halley's Comet. The system will operate over an unusually broad spectral region, from 0.1216 μm (the hydrogen Lyman-alpha line) to 1.1 μm using reflective primary and secondary mirror optics and a thin UV-grade lithium fluoride (LiF) refractive element as a field corrector near the image plane. The f/12, 3000 mm focal length camera has a 0.4° full field of view for operation with a 15 × 15 mm charge-coupled device (CCD) detector array. The UV-enhanced silicon CCD detector is a 1000 × 1000 array of 15 μm pixels which establishes the system resolution requirement."

1478
Huebner, Walter F., *and* M. M. Fikani. Comet Halley, parameter study I. Los Alamos, N.M., Los Alamos National Laboratory, 1982. 43 p. illus. (LA-9346-MS)

NASA accession no. N83-14044.

References (55): p. 33–36.

"To aid in defining a mission to comet P/Halley, its inner coma is simulated by a computer program that models time-dependent chemical reactions in a radially and isentropically expanding gas, taking into account attenuation of solar ultraviolet radiation in the subsolar direction."

1479
Huebner, Walter F. Diminution of cometary heads due to perihelion passage. Zeitschrift für Astrophysik, 65. Bd., 3./4. Heft, 1967: 185–193. illus. QB1.Z4, v. 65

References (13): p. 193.

Calculations are applied to (1) Comet Encke, (2) Comet Halley, and (3) the sungrazing comets as a class. "The calculated mass loss for comet Encke agrees with that for Whipple's 'pin-wheel' effect, but the one for comet Halley is larger than the mass loss based on estimates of luminous molecules in the tail. The average decrease of reduced brightness per perihelion passage cannot be explained solely by the shrinking of the gas producing surface area; a reduction of the sublimation rate, probably due to an increase of a meteoritic insulation layer, must be taken into account."

1480
Huffaker, Lucy. A call from a comet. Woman's world, v. 26, Apr. 1910: 13, 40. illus. AP2.W74, v. 26

1481
Hughes, Cecil E. How to see Halley's Comet. Punch, v. 138, Feb. 16, 1910: 117. AP101.P8, v. 138

Facetious.

1482
Hughes, David W. Halley's Comet in ancient history. Nature, v. 281, Oct. 11, 1979: 428. Q1.N2, v. 281

Chiefly on Y. C. Chang's report concerning the possible sighting of Halley's Comet by the Chinese in 1057 B.C.

1483
Hughes, David W. Here comes Halley's Comet! Sciences, v. 18, Feb. 1978: 6–9, 31. illus., port. Q1.S8147, v. 18

The cover of the issue reproduces in color the representation of the comet's 1066 appearance on the Bayeux Tapestry.

1483a
Hughes, David W. How to say Halley. Nature, v. 304, July 14, 1983: 119–120. port. Q1.N2, v. 304

References (8): p. 120.

Colin A. Ronan comments in a letter headed "Halley's comet" in the Oct. 13 issue, p. 570. A short note from Hughes follows in the same column.

1484
Hughes, David W. The micrometeoroid hazard to a space probe in the vicinity of the nucleus of Halley's Comet. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 51–56. illus.

NASA accession no. N80–22206.

References (16): p. 56.

1485
Hughes, David W. Mission to the comets. New scientist, v. 85, Jan. 10, 1980: 66–69. illus. Q1.N52, v. 85

"The 1980s provide a once-in-a-lifetime opportunity for astronomers to study the nature of comets with a space mission to Tempel-2 and Halley."

The cover of the issue, by Bill Sanderson, features a portrait of Halley and a sketch of the spacecraft deploying a probe as it passes near the approaching comet.

For a followup, see "NASA Cuts May Dim Comet Research" in the Feb. 7 issue, p. 381.

1486
Hughes, David W. The recovery of Halley's Comet. Nature, v. 300, Nov. 25, 1982: 318. Q1.N2, v. 300

Notes that the recovery was confirmed by Belton and Butcher at Kitt Peak on the nights of Oct. 18 and 20, and comments on both the accuracy of Yeomans' ephemeris and the skill of the Palomar team.

The author's letter correcting a statement made in the article appears under the heading "Cometary Record" in the issue of Dec. 16, p. 572.

1487

Hughes, David W. The return of Halley. Nature, v. 290, Mar. 26, 1981: 290–291. illus. Q1.N2, v. 290

On early attempts to recover the comet and general prospects for observing it during its closest approach; cites data from *The Comet Halley Handbook*, by Donald K. Yeomans.

1487a

Hughes, David W. Temporal variations of the absolute magnitude of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 204, Sept. 1983: 1291–1295. illus. DN-Ob

References (7): p. 1294–1295.

"The comet was about 0.5 ± 0.5 mag brighter 2000 years ago and is losing about 2.3 ± 2.3 per cent of its mass at each apparition." Arriving at a figure of 4.7×10^{15} g for the mass of the nucleus, and taking Newburn's 1979 estimate of 2.5 km for the radius, "The density is thus 0.07 g cm^{-3} indicating that the nucleus is a rather fluffy dirty snowball."

1488

Hughes, David W. Visiting Halley's Comet. Nature, v. 268, Aug. 11, 1977: 486–488. Q1.N2, v. 268

About plans for spacecraft missions. In a letter to the editor entitled "Missions to Halley's Comet," published in v. 270, Nov. 10, 1977, p. 97, D. G. Fearn provides more information on the development of ion propulsion systems.

1489

Hugo, Victor Marie, *comte*. La comète: 1759. *In his* La légende des siècles. Nouv. sér., t. 2. Paris, Calmann Lévy, M DCCC LXXVII. p. [111]–121. PQ2285.L3 1877, v. 2

A note on and extracts from this poem appear in the *Observatory*, v. 33, Aug. 1910, p. 341–342 (QB1.O2, v. 33).

1490

Humes, D. Meteoroid protection for the Comet Halley probe. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979*. Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP-153) p. 73–76. illus.

NASA accession no. N80–22210.

References (5): p. 76.

1491

Humphreys, William J. On passing through the tail of Halley's Comet. *In* Mount Weather Observatory, *Bluemont, Va.* Bulletin, v. 3, pt. 4, 1910: 239–244. QC801.B8, v. 3

"Dated October 25, 1910."

On atmospheric phenomena observed May 17–19, 1910, that may have been due in part to the comet. Includes the text of a circular letter sent by Willis L. Moore, chief of the U.S. Weather Bureau, to nearly 200 meteorological stations in the United States and the West Indies, requesting that observations be made on those days. The report submitted by the Mount Weather station is given as an example of the care with which the work was carried out. There is also a table of phenomena observed by Weather Bureau officials on May 19.

This paper, with the omission of the circular and the Mount Weather report, was also presented at the 11th meeting of the Astronomical and Astrophysical Society of America, Aug. 17–19, 1910, in Cambridge, Massachusetts, and appears in the Society's *Publications*, v. 2, p. 35–38 (QB1.A27, v. 2). A summary entitled "Meteorological Observations in Connection With Halley's Comet" was published in *Science*, new ser., v. 32, Dec. 16, 1910, p. 886–887 (Q1.S35, n.s., v. 32).

1492

Humphreys, William J. Some suggestions for the study of comets. Science, new ser., v. 31, Feb. 11, 1910: 226–230. Q1.S35, n.s., v. 31

"This paper was prepared at the request of the comet committee of the Astronomical and Astrophysical Society of America for inclusion in its circular respecting observations of Halley's comet. Through causes for which its author is in no way responsible it did not reach its destination in time to be so used and the committee now seeks to give it publicity through the pages of SCIENCE ..."

The author describes 18 astrophysical and meteorological phenomena that might be expected.

Also published, under the title "Atmospheric Phenomena and Halley's Comet" and dated Jan. 10, 1910, in the Mount Weather Observatory's *Bulletin*, v. 2, pt. 5, 1910, p. 279–285 (QC801.B8, v. 2).

1493

Hunaerts, J. L'interpretation de l'aspect des comètes. Ciel et terre, 69. année, jan./fév. 1943: 17–29. illus., plates. QB1.C5, v. 69

References (20): p. 29.

Based chiefly on data on Halley's Comet collected during its 1910 return.

1494

Hunt, William Malin. [Halley's Comet] English mechanic and world of science, v. 90, Dec. 10, 1909: 445. T1.E5, v. 90

Letter to the editor reporting observations made Dec. 4 and 7 at Nottingham.

1495

Hunter, Andrew F. A layman's diary of Halley's Comet, 1910. *In* Royal Astronomical Society of Canada. Journal, v. 4, May/June 1910: 204–211. QB1.R485, v. 4

Observations were made at Barrie, Ont., during the period Apr. 28–June 3, 1910.

1496

Hurstmonceux, Eng. Royal Greenwich Observatory. Investigation of the motion of Halley's Comet from 1759 to 1910, by P. H. Cowell and A. C. D.

Crommelin of the Royal Observatory, Greenwich; under the direction of Sir William Henry Mahoney Christie. *In* Astronomical and magnetical and meteorological observations made at the Royal Observatory, Greenwich, in the year 1909. Edinburgh, Printed for H.M. Stationery Off. by Neill, 1911. 84 p. (last group) QB4.G81, 1909

—— ——— Offprint. Edinburgh, Printed for H.M. Stationery Off. by Neill, 1910. 84 p. QB723.H2G8

"This Appendix, though complete in itself, is conditioned by the Essay published by the *Astronomische Gesellschaft* (*Publikation der Astronomischen Gesellschaft*, xxiii., Leipzig, 1910).

"The object of that Essay was to calculate an orbit for Halley's Comet. In the present Appendix, a more thorough examination is made into the forces required to maintain motion in the orbit of the *Ast. Ges.* Essay, and the differences that exist between the known impressed forces and the effective forces.

"Had the *Ast. Ges.* Essay been entirely free from numerical blunders, and had the prediction made in it been exactly verified, there would have been nothing to add in this Appendix."

Noting that the numerical blunders were not very serious and that "they only account for a small fraction of the observed discordances," the authors infer "that there are forces of an unrecognised kind influencing the Comet's motion."

1497

Hurstmonceux, Eng. Royal Greenwich Observatory. Observations of comets *c* 1909, *e* 1909, *a* 1910, *b* 1910, and *e* 1910, and neighbouring stars from photographs taken with the 30-inch reflector and the astrographic 13-inch refractor in the years 1909 and 1910. *In* Astronomical and magnetical and meteorological observations made at the Royal Observatory, Greenwich, in the year 1910. Edinburgh, Printed for H.M. Stationery Off. by Neill, 1912. p. [C 83]–C 104. QB4.G81, 1910

"Observations of Comet *c* 1909 (Halley) and Neighbouring Stars, from Photographs taken with the 30-inch Reflector": p. C 85–C 92.

"Adopted Plate Constants for Photographs of Comet *c* 1909 (Halley)": p. C 99–C 100.

"Right Ascensions and Declinations of Comet *c* 1909 (Halley), from Photographs taken with the 30-inch Reflector, and the Astrographic 13-inch Refractor": p. C 102–C 103. This table was also published in the *Monthly Notices* of the Royal Astronomical Society, v. 71, Mar. 1911, p. 475–476 (QB1.R7, v. 71).

The data are based on 52 photographs taken during the period Sept. 9, 1909–June 2, 1910.

1498

Hurstmonceux, Eng. Royal Greenwich Observatory. Observations of Halley's Comet made with the altazimuth at the Royal Observatory, Greenwich. *In* Royal Astronomical Society. Monthly notices, v. 70, May–June 1910: 539, 604–605. QB1.R7, v. 70

Communicated by the Astronomer Royal.

Data from nine observations made May 2–June 2, 1910.

1499

Hurstmonceux, Eng. Royal Greenwich Observatory. [The recalculation of the perturbations of Halley's Comet by Mr. Cowell and Mr. Crommelin] *In its* Report of the Astronomer Royal to the Board of Visitors of the Royal Observatory, Greenwich. 1906/7–1909/10. [London?] p. 17; p. 17–18; p. 16–17; p. 17–18. QB2.G8, 1907–10

1500

Hurtnell, George. Meteors on May 6. Popular astronomy, v. 18, Nov. 1910: 578. illus. QB1.P8, v. 18

Reports observations made at Vieques, Puerto Rico. The meteors were thought to be related to Halley's Comet.

1501

Hussey, Thomas J. Beobachtungen des Halleyschen Kometen von T. J. Hussey D.D. dem Herausgeber mitgetheilt. Astronomische Nachrichten, 13. Bd., Nr. 298, 6. Jan. 1836: columns 159–160. QB1.A77, v. 13

In English, with an afterword in German by the editor.

Reports observations made at Hayes, Kent, during the period Aug. 28–Oct. 19, 1835.

1502

Hussey, Thomas J. Schreiben des Herrn Hussey an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 309–310, 315–318. QB1.A77, v. 12

In English.

Two letters, reporting his observations of the comet made Aug. 23 and Aug. 28–30 at Hayes, Kent.

1503

Hussey, Thomas J. Schreiben des Herrn Hussey an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 306, 9. Mai 1836: columns 291–294. QB1.A77, v. 13

In English.

Attempts to explain why Halley's Comet was found almost simultaneously by many astronomers using instruments of various kinds and sizes in different parts of Europe.

1504

Huygens, Christiaan. N° 2277. Christiaan Huygens à Constantyn Huygens, frère. 13 septembre 1682. *In his* Œuvres complètes, publiées par la Société hollandaise des sciences. t. 8. Correspondance, 1676–1684. La Haye, M. Nijhoff, 1899. p. 388–391. illus. Q113.H9, v. 8

Writing from The Hague, Huygens describes Halley's Comet, which he saw early in September, but he was evidently much more interested in a conjunction of Mars, Jupiter, and Saturn which was then visible. His sketch of the comet is reproduced.

1505

Hynek, Joseph Allen. Halley's, home computers & hot dwarfs. Science digest, v. 90, July 1982: 26–27. illus. (part col.) Q1.S383, v. 90

A question-and-answer column. The first query, to which most attention is devoted, concerns the 1986 return of Halley's Comet.

1506
"I reached the tail of Halley's Comet May 1, 1910; I return to Copenhagen by motor parachute."—Yours truthfully, Dr. Frederick A. Cook. Chicago Sunday tribune, v. 69, May 15, 1910, pt. 9: 3. illus. N&CPR

Parodies the report of the man whose claim to have reached the North Pole was subsequently found to be false.

1507
I͡At͡skiv, I͡A. S. Pervye nabli͡udenii͡a priblizhai͡ushcheisi͡a komety. Zemli͡a i vselennai͡a, mart/apr. 1983: 34–36. illus. QB1.Z47, 1983

On the recovery of Halley's Comet.

1507a
I͡At͡skiv, I͡A. S., *and* K. I. Churi͡umov. Sovetskai͡a programma nazemnykh nabli͡udeniĭ komety Gallei͡a (SOPROG). *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 311, 31 avg. 1983: 3–4. DN-Ob

1508
Iba, Yasuaki. Astronomical records of Riukiu. *In his* Fragmentary notes on astronomy in Japan. Supplement, no. 2. [Ohte, Kobe, Japan, Y. I. Observatory, 1933] p. 4–6. CtY; IEN

"Records re Halley's Comet": p. 4.

Briefly notes that the apparitions of 1682, 1759, and 1835 are recorded in manuscript annals of Ryukyu entitled *Kiuyoh.*

Reprinted in *Popular Astronomy*, v. 46, Mar. 1938, p. 144 (QB1.P8, v. 46).

1509
Ienish, P. Kometa Galli (Halley). S.-Peterburg, Izd. Russkai͡a Uranii͡a, 1910. 28 p. illus.

1510
Igenbergs, E., H. Kuczera, *and* U. Weishaupt. Results of impact simulation for the Giotto-Mission. [München?] Technische Universität München, Luft- und Raumfahrt, 1982. 24 p. illus. (IAF paper 82–211)

AIAA accession no. A82–46991.

References (7): p. 24.

Presented at the 33d congress of the International Astronautical Federation, Sept. 27–Oct. 2, 1982, in Paris.

1511
Ignat′ev, E. I. O kometakh. Obshchedostupnyĭ astronomicheskiĭ ocherk po povodu poslědni͡ago poi͡avlenii͡a komety Gallei͡a v 1910 godu. S.-Peterburg, Izd. Vskhody, 1913. 157 p. illus.

1512
Ihr Betrachter und Beobachter der täglich-neuen Welt-Begebenheiten, stehet, schauet, und erstaunet, uber einer abermahl in der Lufft aufgesteckten Göttlichen Zorn-Fackel. Augstburg, Gedruckt bey J. J. Schönigk [1682] broadside (1 p.) illus.

The illustration shows a view of Augsburg; two comets appear in the sky, and three horsemen of the Apocalypse are in the foreground. The scene is bordered by a clock face, the numerals of which are made of bones, weapons, and instruments of torture. Each of the four corners outside the dial contains an allegorical figure with an appropriate biblical text.

1513
Impallomeni, N. Alla cometa di Halley; ode. Roma, Tip. Unione ed., 1910. 5 p.

1514
Íñiguez e Íñiguez, Francisco. Observaciones del cometa de Halley, efectuadas en el observatorio de Madrid por D. A. Vela. Ecuatorial de Merz de 0.27 m. Astronomische Nachrichten, Bd. 187, Nr. 4466, 19. Jan. 1911: columns 21–26. QB1.A77, v. 187

Made Feb. 12–June 23, 1910.

1515
Íñiguez e Íñiguez, Francisco. Les observations de la comète de Halley à l'observatoire de Madrid. Cosmos, t. 62, 28 mai 1910: 594–596. illus.

Photographs made May 4, 5, 6, and 11, and spectrograms taken May 9 and 11 are reproduced.

1516
Íñiguez e Íñiguez, Francisco. Les observations de la comète de Halley à l'observatoire de Madrid. *In* Société astronomique de France. Bulletin, 24. année, sept. 1910: 394–395. illus. QB1.S6, v. 24

Summarizes observations made Feb. 11–May 14. The illustration reproduces spectrograms made May 9 and 11.

1517
Íñiguez e Íñiguez, Francisco. Observations physiques de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 4 juil. 1910: 44–46. Q46.A14, v. 151

Discusses the spectrum and the tail.

1518
Innes, Robert T. A. Additional morning observations of Halley's Comet after transit, 1911 [sic] May 19–20–21. *In* Johannesburg. Transvaal Observatory. Circular, no. 11, Sept. 6, 1911: 99–101. illus. QB4.J7, no. 11

Sketches of the tails of the comet, with notes, made at Stellenbosch by Prof. H. Clement Notcutt and two other observers.

1519
Innes, Robert T. A. Brightness of Halley's Comet. Observatory, v. 33, Nov. 1910: 444. QB1.O2, v. 33

Letter to the editor.

1520
Innes, Robert T. A. The earth and comets' tails. South African journal of science, v. 6, June 1910: 355–356. plate. Q85.S5, v. 6

Argues that the earth did not pass through the tail of Halley's Comet on May 18–19 or subsequently. The plate reproduces a photograph taken

May 6; a comment on the photograph appears in the *Observatory*, v. 33, July 1910, p. 302 (QB1.O2, v. 33). The text of the article was also published in *Nature*, v. 83, June 16, 1910, p. 459 (Q1.N2, v. 83), and *Scientific American Supplement*, v. 70, July 9, 1910, p. 23 (T1.S52, v. 70).

1521

Innes, Robert T. A. General visual appearances. Evening observations. *In* Johannesburg. Transvaal Observatory. Circular, no. 4, July 11, 1910: 28–30. plates. DN-Ob

The plates reproduce sketches made Apr. 16–June 1.

1522

Innes, Robert T. A. Halley's Comet. Astronomische Nachrichten, Bd. 186, Nr. 4441. 16 Sept. 1910: columns 11–12. QB1.A77, v. 186

Observations made at the Transvaal Observatory on Aug. 11–12.

1523

Innes, Robert T. A. [Halley's Comet] Observatory, v. 33, July 1910: 302. QB1.O2, v. 33

Extract from a letter to the editor calling attention to the mention of a comet, perhaps Halley's, in no. 275 of the Paston letters (from John Bocking to Sir John Fastolf, with a date corresponding to Feb. 9, 1456).

1524

Innes, Robert T. A. Halley's Comet. Additional observations and remarks. *In* Johannesburg. Transvaal Observatory. Circular, no. 5, Sept. 26, 1910: 55. QB4.J7, no. 5

Quotes a letter from H. D. Badcock describing observations made at Suva, Fiji, May 18–21.

1525

Innes, Robert T. A. Halley's Comet. Disruption of the tail, 18th–19th May, 1910. *In* Johannesburg. Transvaal Observatory. Circular, no. 3, May 26, 1910: 15–20. illus. DN-Ob

Includes reports of observations received by letter from H. C. Reeve (Lorentzville), Charles F. Juritz (Cape Town), E. A. Goetz (Bulawayo), C. Dimond H. Braine (southwest Transvaal), and W. H. Finlay (Bloemfontein).

1526

Innes, Robert T. A. Measured length of tail taken visually. *In* Johannesburg. Transvaal Observatory. Circular, no. 4, July 11, 1910: 27. illus. DN-Ob

Observations made Feb. 1–July 6, 1910.

1527

Innes, Robert T. A. Meteorological and miscellaneous observations at the time of transit of Halley's Comet. 1910. May 18–19. *In* Johannesburg. Transvaal Observatory. Circular, no. 4, July 11, 1910: 31–33. plate. DN-Ob

Includes reports of observations received by letter from W. A. Harbor (Mochudi, Bechuanaland), H. A. Spencer (Middelburg, Transvaal), and

Otto Menzell, G. R. Hughes, and Mrs. Hughes, all of Pretoria. The plate reproduces sketches made by Mr. Menzell on the night of May 18/19.

1528

Innes, Robert T. A. Micrometer observations for the position of Halley's Comet, 1910. *In* Johannesburg. Transvaal Observatory. Circular, no. 4–5, July 11, Sept. 26, 1910: 34–35, 56. DN-Ob

Observations were made Apr. 13–Aug. 11, 1910. Positions of comparison stars for the observations published in *Circular* no. 5 are given in *Circular* no. 7, Apr. 3, 1911, p. 76.

1529

Innes, Robert T. A. Passage of the earth through the tail of Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 21, Feb. 1911: 239–240. QB1.B75, v. 21

Letter to the editor.

1530

International Aerological Commission. Beobachtungen mit bemannten, unbemannten Ballons und Drachen sowie auf Berg- und Wolkenstationen vom 18.–20. Mai 1910. Observations des ascensions internationales simultanées et des stations de montagne et de nuages du 18–20 mai 1910. Strassburg, M. DuMont Schauberg, 1912. 177–281 p. (*Its* Veröffentlichungen, Jahrg. 1910, Heft 5) QC879.I578, 1910

Contents: I. Beobachtungen in der freien Atmosphäre vom 18.–20. Mai 1910. Observations dans l'atmosphère libre du 18–20 mai 1910.—II. Beobachtungen von Bergstationen vom 18.–20. Mai 1910. Observations de stations de montagne du 18–20 mai 1910.—III. Wolkenbeobachtungen vom 17.–21. April [sic] 1910. Observations de nuages du 17–21 avril [sic] 1910.

Running heads for the 3d section indicate, in German and French, that the data for cloud observations cover the period of May 17–21, not April.

See also the "Nachtrag" in Heft 9, p. 560, with data recorded by a weather balloon sent up on May 18 by the Pavlovsk observatory.

Observations were specially made during the period when the earth was expected to pass through the tail of Halley's Comet.

1531

The International Halley Watch amateur observer's bulletin. no. 1+ Dec. 1982+ Pasadena, Calif., Jet Propulsion Laboratory, California Institute of Technology.

"Future issues of this bulletin will appear on an irregular or quarterly basis."

1532

The International Halley Watch newsletter. no. 1+ Aug. 1, 1982+ Pasadena, Calif., Jet Propulsion Laboratory, California Institute of Technology.

"Future issues will appear on an irregular or quarterly basis."

1533

International Halley Watch Science Working Group. The International Halley Watch; report of the Science Working Group. [Washington?

National Aeronautics and Space Administration, 1980] 72 p. illus., facsims., port. (NASA TM–82181) Sci RR

NASA accession no. N80–32310.

Edited by John C. Brandt, Louis D. Friedman, Ray L. Newburn, and Donald K. Yeomans.

Following introductory statements on the scientific rationale for investigating comets in general and P/Halley in particular, historical background, and a list of the aims of cometary research in the 1980s, plans are presented for coordinating professional and amateur observations over a broad range of studies. Appendixes include an ephemeris at 5-day intervals and a facsimile of the *Circular Respecting Observations of Halley's Comet, 1910*, issued by the Astronomical and Astrophysical Society of America (now the American Astronomical Society). The cover depicts in color Delphine Delsemme's tapestry copy of the two Bayeux Tapestry panels that feature the comet's appearance in 1066.

1534

Internationale Kommission für wissenschaftliche Luftschiffahrt. Wiener Luftschiffer-Zeitung, 9. Jahrg., 1. Mai 1910: 157. TL503.W5, v. 9

Reprints a circular from the commission inviting members of the various national aero clubs to make balloon ascents during May 18–20, the period when the earth was scheduled to pass through the comet's tail. Instructions on how to prepare and use apparatus for collecting air samples, drawn up by L. P. Teisserenc de Bort, appear on p. 163 of this issue, under the heading "Luftproben."

1535

An Interview with Mr. Halley's comet. Harper's weekly, v. 53, Nov. 6, 1909: 21. Micro 02231

1536

Ionides, Stephen A., *and* Margaret L. Ionides. [Halley's Comet] *In their* Stars and men. Indianapolis, Bobbs-Merrill Co. [1939] p. 186–190. illus., plate. QB44.I6

Includes the undocumented assertion that "Shakespeare had seen Halley's comet in 1607."

1537

Ip, Wing-Huen. Cometary atmospheres. I. Solar wind modification of the outer ion coma. Astronomy and astrophysics, v. 92, Dec. (I) 1980: 95–100. illus. QB1.A83, v. 92

References (30): p. 99–100.

"Using a quasi-one-dimensional fluid approximation for the solar wind interaction with a comet, velocity profiles for the inward streaming plasma in a cometary atmosphere are generated and, in turn, adopted to compute the number density distributions of cometary ions produced upstream of the comet head. The external solutions so obtained are interpolated to the inner ion coma models assuming the cometary atmosphere to be expanding radially with constant speed as the neutral gases. From this procedure the dynamical behaviour of the cometary ionospheric plasma of an Halley-type comet is approximated as a combination of subsonic inward flow and outflow from the central source. This is the first report of ongoing model calculations to simulate such solar wind modifications of the cometary ion comae."

1538

Ip, Wing-Huen. Dynamics and chemistry of cometary comae: a pre-Giotto view. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 79–91. illus.

NASA accession no. 82–14117.

References (85): p. 89–91.

Includes sections on the ion-tail and coma activities of Halley's Comet.

1539

Irvine, William M., F. Peter Schloerb, *and* Eric Gérard. Radio science and the International Halley Watch. Amherst, MA [1982?] 12 p. (Five College Radio Astronomy Observatory Reports) DN-Ob

References (12): p. 7–8.

Presented at the International Conference on Cometary Exploration, held in Budapest, Nov. 1982.

"The goals, special problems, and current status of the Radio Science Net for the International Halley Watch are described."

Tables list observatories participating, or planning to participate, in the radio science net of the IHW, with information about their instruments and frequency coverage.

1540

Irwin, Wallace. An interview with Halley's Comet. Life, v. 55, May 5, 1910: 827, 832, 834, 855–856. illus. AP101.L6, v. 55

The celestial visitor comments on current problems and achievements in the United States and compares them with conditions in other populated parts of the universe.

1541

[Irwin, Wallace] Roosevelt praises the comet—by Togogram to the Tribune. New-York tribune, v. 70, May 15, 1910, pt. 5: 3. illus. N&CPR

Comic sketch by "Hashimura Togo"; includes a parody of "Twinkle, Twinkle, Little Star."

1542

Is Comet Halley already active? Comet news service, Mar. 21, 1983: 1. illus. DN-Ob

Compares images of the comet taken Dec. 10, 1982, and Jan. 14, 1983, at the European Southern Observatory and notes that in the second picture the comet appears to have brightened more than expected and also seems to show a faint extension.

1543

Ivanov, Aleksandr A. Die Berechnung der Störungen der Bahnbewegung des Halleyschen Kometen für den Zeitraum von 1835 bis 1910. Astronomische Nachrichten, Bd. 183, Nr. 4377, 17. Dez. 1909: columns 131–138. QB1.A77, v. 183

A brief report that includes a table of Ivanov's final definitive elements appears in *Popular Astronomy*, v. 18, Mar. 1910, p. 182 (QB1.P8, v. 18).

1544
Ivanov, Aleksandr A. Kometa Galle͡ia. *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg*. Ezhegodnik . . . na 1910 g. S.-Peterburg, Tip. G. Shakht, 1910. p. [87]–91. [illegible] QB9.R8, 1910

Includes orbital elements and an ephemeris for the period Jan. 1–Sept. 18, 1910.

1545
Ivanov, Aleksandr A. Kometa Galle͡ia i e͡ia predstoi͡ashchee poi͡avlenīe. S.-Peterburg, Tip. G. Shakht, 1909. 52 p. illus., port. Yudin QB723.H18

1546
Ivanov, Aleksandr A. O kometi͡e Galle͡ia. *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg*. Izvi͡estīi͡a, vyp. 15, sent. 1909: 120–122. QB1.R9, v. 15

See also the correction published under the same heading in the noi͡abr' issue, p. 182.

1547
Ivanov, Aleksandr A. Über den Halleyschen Kometen. Astronomische Nachrichten, Bd. 182, Nr. 4358, 24. Sept. 1909: columns 225–226. QB1.A77, v. 182

Elements calculated by the Russian astronomical society of St. Petersburg, and an ephemeris for Sept. 4–Dec. 23, 1909.

1548
Ivanov, I. T. Kometa Galle͡ia i predstoi͡ashchee stolknovenīe e͡ia s zemleĭ. (Po povodu tolkov o vozmozhnoĭ konchini͡e mīra.) S.-Peterburg, Tip. Bezobrazova, 1910. 15 p.

1549
Ivanov, Kim G., *and* A. D. Shevnin. Geomagnitnye i͡avlenii͡a, nabli͡udavshiesi͡a pri prokhozhdenii zemli cherez khvost komety Galle͡ia 1910 II. Geomagnetizm i aeronomii͡a, t. 6, no. 5, 1966: 822–826. illus. QC811.G38, v. 6

References (21): p. 826.

An English translation, "Geomagnetic Phenomena Observed During the Transit of the Earth Through the Tail of Halley's 1910 II Comet," appears in *Geomagnetism and Aeronomy*, v. 6, no. 5, 1966, p. 634–637 (QC811.G383, v. 6).

Basing their analysis on data from seven northern hemisphere observatories, the authors put forward some ideas in favor of the existence of a geomagnetic effect from Halley's Comet.

1550
Izobrazhenīe puti komety Galle͡ia 5-go, 6-go i 7-go mai͡a 1910 g. Iskry, g. 10., 9 mai͡a 1910 g.: 144. illus. AP50.I8, v. 10

1551
Izzard, W. H. Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 15, Feb. 1905: 168. QB1.B75, v. 15

Letter to the editor asking whether Palitzsch's recovery of the comet on Dec. 25, 1758, was made with the naked eye or with a telescope (both versions of the story having been published). A reply by William F. Denning, entitled "George Palitzch and Halley's Comet in 1758" and substantiating the latter version, appears in the March issue, p. 203–204.

1552
Jacobson, Robert A., *and* Catherine L. Thornton. Elements of solar sail navigation with application to a Halley's Comet rendezvous. Journal of guidance and control, v. 1, Sept./Oct. 1978: 365–371. illus.
TL676.J65, v. 1

References (18): p. 371.

1553
Jacoby, Harold. The coming of Halley's Comet. Harper's weekly, v. 53, Nov. 20, 1909: 13. illus., port. Micro 02231

1554
Jahn, Gustav A. Der vom August 1835 bis zum April 1836 sichtbare Halley'sche Komet in seinem Laufe dargestellt und erklärt, nebst einer vorläufigen Hindeutung auf die grosse Sonnenfinsterniss den 15. Mai 1836. Leipzig, G. Wigand's Verlag, 1835. 64 p. fold. plate. QB3.A8, v. 10

1555
Jamard, T. Mémoire sur la comète qui a été observée en 1531, 1607, 1682, et qui l'on attend en 1757, ou au plus tard en 1758. Carte géographique, sur laquelle on a rapporté les observations de la comète, par Philippe Buache. Paris, Sur le Quai d'horloge du palais, 1757. 12 p. maps.

Held by the British Library under shelfmark K. 1. 81. 3. (the maps, by Jamard and Buache, are separately held under shelfmarks K. 1. 81. 1. and K. 1. 81. 2. respectively), and by the Bibliothèque nationale (Paris) under shelfmark V. 7991.

Reviewed in *Mémoires pour l'histoire des sciences et beaux-arts*, oct. 1757, 1. v., p. 2474–2480 (AS161.T8, 1757).

1556
Jamard, T. Route que doit tenir pendant le mois de May 1759 la comète qui a été observée en 1531, 1607, et 1682, et qui a passé à son périhélie dans sa derniere révolution le 13. Mars vers 4 heures du soir de cette année 1759. [Paris?] P. Buache, 1759. map.

Held by the British Library under shelfmark K. 1. 81. 4.

1556a
[Jannasch, Lilli] Komet und Kultur. Ethische Kultur, 18. Jahrg., 1. Juni 1910: 85–86. 4-Serials

Comments on the sensationalism and folly associated with the return of Halley's Comet and urges the teaching of a more rational and fulfilling kind of life that does not need to sustain itself on novelty.

1557
Jánosi, Imre. A Halley-féle üstökös megjelenése. Természettudományi közlöny, 41. köt., 1909. okt. 1.: 683–684. Q44.B93, v. 41

1558
Janssen, Aase Luplau. Astronomien og de middelalderlige billedtæpper. Urania (København), 13. aarg., april/maj 1956: 37–48. QB1.U67, v. 13

Chiefly about the representation of Halley's Comet in the Bayeux Tapestry.

1559
Jaschke, Heinrich. Eine astronomische Nachtfahrt. Wiener Luftschiffer-Zeitung, 9. Jahrg., 15. Mai 1910: 173–175. TL503.W5, v. 9

An astronomer on the staff of the Vienna observatory who was also a member of the Austrian aero club describes a balloon ascent made on Apr. 29 to observe Halley's Comet.

1560
Javelle, Stéphane. Observations de comètes, faites à l'observatoire de Nice (équatorial Gautier de 0^{m},76 d'ouverture). Bulletin astronomique, t. 27, déc. 1910: 456–465. QB1.B9, v. 27

Halley's Comet: p. 457–458, 463–465. Observations were made Oct. 12, 1909–July 7, 1910. Comparison stars are listed on p. 459–461.

The observations of Oct. 12–22, 1909, were first published in the *Comptes rendus hebdomadaires des séances* of the Académie des sciences, Paris, t. 149, 26 oct. 1909, p. 663–664 (Q46.A14, v. 149). Observations made Oct. 12–23 were published in *Astronomische Nachrichten*, Bd. 183, Nr. 4377, 17. Dez. 1909, columns 137–140 (QB1.A77, v. 183).

1561
Javelle, Stéphane. Observations de comètes, faites à l'observatoire de Nice (équatorial Gautier de 0^{m},76 d'ouverture). Bulletin astronomique, t. 29, jan. 1912: 31–41. QB1.B9, v. 29

Halley's Comet: p. 31–32, 38–39. Observations were made July 2, 1910–Apr. 26, 1911. Comparison stars are listed on p. 34–35.

The observations of Nov. 3–12, 1910, were first published in the *Comptes rendus hebdomadaires des séances* of the Académie des sciences, Paris, t. 151, 14 nov. 1910, p. 850–851 (Q46.A14, v. 151).

1562
Jeaurat, Edme S. Observations de la comète de 1682, 1607 & 1531, faites en mai 1759. *In* Académie des sciences, *Paris*. Mémoires de mathématique et de physique, présentés à l'Académie royale des sciences, par divers savans, & lûs dans ses assemblées. t. 4. A Paris, De l'Impr. royale, M. DCCLXIII. p. 182–187. fold. plate. Q46.A142, v. 4

The plate is inserted between p. 188 and p. 189.

1563
Jehan, Louis F. Comète de Halley ou de 1759. *In his* Dictionnaire d'astronomie, de physique et de météorologie. Paris, Chez l'éditeur, 1850. (Encyclopédie théologique, t. 42) columns 339–343. BL21.M5, v. 42

1564
Jeker, Ernst. Der Halleysche Komet. Die Schweiz, Jahrg. 14, 15. Mai 1910: 259–261. illus. AP32.S4, v. 14

1565
Jelinek, Karl, *and* Karl Hornstein. Cometen-Beobachtungen an der k.k. Wiener Sternwarte, reduziert von Dr. C. Jelinek und C. Hornstein. Enthaltend die Beobachtungen des Halley'schen Cometen im Jahre 1835 und 1836, und der Cometen in den Jahren 1843–1846. [Wien, Gedruckt in der k.k. Hof-Buchdruckerei des L. Sommer, 1849] 129 p. (Annalen der k.k. Sternwarte in Wien, n.F., 13. Bd., 4. Heft) QB4.V66, n.F., v. 13

"Comet Halley": p. 1–14.

"Vergleichsterne zum Cometen Halley": p. 15–16.

1566
Jenkins, J. Observations of Halley's Comet made on board s.s. "Majestic." *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 619. QB1.R7, v. 70

Describes observations made on the night of May 28/29 while bound for Plymouth from New York.

1567
Jenkins, R. Wade. How I found Halley's Comet. English mechanic and world of science, v. 91, May 27, 1910: 378. T1.E5, v. 91

Letter to the editor reporting an observation made May 23. A subsequent letter, "Halley's Comet—the Meteor of June 1," signed only "H.B.O." and published in the June 17 issue (p. 452), reports an observation made June 11. In a third letter, "Latest Sighting of Halley's —?" in the June 24 issue (p. 475), he expresses doubts about the genuineness of his June 11 sighting.

1568
Jewitt, David C., *and* George Edward Danielson. [Comet Halley. Pasadena, Calif., Public Information Office, Jet Propulsion Laboratory, California Institute of Technology, National Aeronautics and Space Administration, 1982] photoprint 19.6 × 24 cm. (P-25344BW)

The recovery image, taken Oct. 16 with a charge-coupled device placed at the prime focus of the 200-inch Hale Telescope at Palomar Mountain.

1569
Johnson, Philander C. The comet. Evening star (Washington, D.C.), Feb. 5, 1910, pt. 1: 6. N&CPR

Humorous poem. Reprinted in the *Observatory*, v. 33, Apr. 1910, p. 190 (QB1.O2, v. 33).

Johnson's daily column on the editorial page of the *Evening* (and *Sunday*) *Star* included many other poems of varying length relating to the comet, as follows:

"Superstitious Dread," Feb. 3, p. 6;
"An Unscientific Opinion," Mar. 5, pt. 1, p. 6;
"Concerning Comets," Mar. 25, p. 6;
"Remote Danger," Mar. 31, p. 6;
"Comparison," Apr. 17, pt. 2, p. 4;

"The Comet," Apr. 18, p. 6;
"Examples," Apr. 20, p. 6;
"The Early Riser," Apr. 25, p. 6;
"An Object of Distrust," Apr. 28, p. 6;
"A Comet's Disrespect," May 1, pt. 2, p. 4;
"Unsubstantial Display," May 7, pt. 1, p. 6;
"The Uncouth Comet," May 8, pt. 2, p. 4;
"A Great Convenience." May 17, p. 6;
"Passing of the Comet," May 19, p. 6; and
"The Departure," May 19, p. 6.

1570

Johnstone, A., *and others*. A cometary plasma experiment for the mission to Comet Halley. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 17–27. illus.

NASA accession no. N82–14111.

References (18): p. 27.

1571

Jones, David R. L., *and* Arthur J. Meadows. The tail oscillations of Comet Burnham (1960 II) and Comet Halley (1835 III). Observatory, v. 89, Oct. 1969: 184–185. QB1.O2, v. 89

References (4): p. 185.

1572

Jones, Wex. The diary of a comet. New York American, May 19, 1910: 18. N&CPR

Facetious.

1573

Jones, Wex. Our hurried caller. New York American, May 18, 1910: 20. N&CPR

Facetious. Purports to quote Professor Lowell as well as some imaginary scientists regarding what may happen when the earth encounters the comet.

1574

Joslin, Benjamin F. Observations on the tails of Halley's Comet, as they appeared at Union College, Schenectady, N.Y., in Oct. 1835. American journal of science and arts, v. 31, Jan.–Apr. 1837: 142–155, 324–332. Q1.A5, v. 31

—— ——— Offprint. [New Haven, 1837] 24 p. QB723.H2J8

The second part is entitled "Additional Remarks on the Tails of Halley's Comet."

1575

Jover y Anido, Julio. El barómetro y el paso del cometa Halley. El Figaro (Havana), año 26, abril 10 de 1910: 172. port. AP63.F5, v. 26

1576

Jover y Anido, Julio. El Halley y el nuevo cometa. El Figaro (Havana), año 26, marzo 13 de 1910: 122–123. illus. AP63.F5, v. 26

1577

Jover y Anido, Julio. Las lluvias de estrellas y el cometa de Halley. El Figaro (Havana), año 26, mayo 15 de 1910: 233. AP63.F5, v. 26

1578

Joy-riders of space. Puck's monthly magazine and almanac, May 1910: [14] illus. AP101.P725, 1910

A crescent moon frowns as the speeding comet, its head embellished with a steering wheel and the head and hands of a motorist, rushes past a sign reading "Moon limits: comets slow down to 500 miles a minute."

1579

Judgment concerning the comet of 1301. *In* Thorndike, Lynn, *ed.* Latin treatises on comets between 1238 and 1368 A.D. [Chicago] University of Chicago Press [1950] (Corpus of medieval scientific texts sponsored by the Mediaeval Academy of America and the University of Chicago, v. 3) p. 202–207. QB41.T4

Latin text, with English introduction, of an anonymous manuscript in the library of Pembroke College, Cambridge, describing observations made Sept. 30–Oct. 6, 1301, of a comet which may have been Halley's. See Richard Dunthorne's letter commenting on this manuscript, published in the Royal Society's *Philosophical Transactions*, v. 47, 1751/52, p. 281–288 (Q41.L8, v. 47 Rare Bk. Coll.).

1580

Juggarow, Goday V. Table for computing the position of Halley's Comet. Madras journal of literature and science, v. 3, Jan. 1836: 62–64. AS472.M2, v. 3

"A Table shewing the Mean Anomaly of Halley's Comet, corresponding to every 10 minutes of the eccentric anomaly" accompanies a short ephemeris for Jan. 1836.

1581

Kaempffert, Waldemar B. The comet day by day. Washington post, May 9, 1910: 2; May 10: 4; May 11: 11; May 12: 11; May 13: 11; May 14: 7; May 16: 4; May 17: 3; May 18: 4; May 19: 2; May 20: 11; May 21: 5; May 23: 4; May 24: 11; May 25: 11; May 26: 5; May 27: 13; May 28: 5; May 30: 5; May 31: 10; June 1: 5; June 2: 13; June 3:10; June 4: 5. N&CPR

Contents: The end of Halley's Comet.—Halley's Comet in history.—The enormous size of comets.—Comet tales.—How comets are discovered.—What is a comet?—Who was Halley?—The transit of Halley's Comet across sun's disk.—Famous comet scares.—How Halley's Comet appeared in 1835.—The vagaries of a comet's tail.—[Comet problems]—Instruments used for the study of Halley's Comet.—Popular errors in regard to comets.—How comets travel.—Lost comets.—How big is a comet?—Comets and meteors.—The chemist and the comet's tail.—Some famous comet hunters.—Birth of a comet.—A medieval transit of comet across the sun's disk.—Science and the transit of the comet.—Americans as comet hunters.

At the beginning of each column is a summary of current data about the comet and advice on where to look for it that night.

The column for May 16 and the last 10 of the series do not carry Kaempffert's byline.

1582
Kaempffert, Waldemar B. Halley and his comet. Outlook, v. 93, Oct. 23, 19[illegible] 428–434. illus. AP2.O8, v. 93

A somewhat longer version, with mostly different illustrations, appears in the *Pall Mall Magazine*, v. 45, Mar. 1910, p. 390–399 (AP4.P17, v. 45).

1583
Kaempffert, Waldemar B. The most famous of comets: the celestial visitor of the centuries, which reappears in 1910. Collier's, v. 45, Apr. 2, 1910: 21–22. illus. AP2.C65, v. 45

One of the illustrations shows a handbill issued in Shanghai by the Christian Literature Society announcing the sale of posters, in literary or vernacular Chinese, designed to forestall fear of the comet.

1584
Kaempffert, Waldemar B. The peril of the comet. Saturday evening post, v. 182, Apr. 16, 1910: 3–4, 49–50. illus. AP2.S2, v. 182

"Decorations by James M. Preston."

1585
Kaiser, Friedrich. [De Komeet van Halley] Algemeene konst- en letterbode, 28. aug. 1835: 159–160. AP15.A5, 1835

A brief report on his first observations at Leiden on Aug. 24 and 25.

1586
Kaiser, Friedrich. De komeet van Halley. *In his* De sterrenhemel. 4. druk, bewerkt door J. A. C. Oudemans. 1. deel. Deventer, W. Hulscher, 1884. p. 313–315. DN-Ob

1587
Kaiser, Friedrich. Nader berigt aangaande de tegenwoordige verschijning der komeet van Halley. Algemeene konst- en letterbode, 2. oct. 1835: 250–255. AP15.A5, 1835

Includes a table showing the location of the comet and indicating the best time for viewing it during the period Oct. 2–22.

1588
Kaiser, Friedrich. Schreiben des Herrn F. Kaiser, Doctors der Philosophie in Leyden, an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 299, 3. Feb. 1836: columns 177–180. QB1.A77, v. 13

In French.

Reports observations made during the period Aug. 23–Nov. 10, 1835.

1589
Kaiser, Friedrich. Uitkomsten der waarnemingen op de komeet van Halley. Algemeene konst- en letterbode, 5.–19. mei 1837: 316–320, 332–336, 347–351. AP15.A5, 1837

1590
Kaiser, Friedrich. Verhandeling over de komeet van Halley, hare vroegere verschijningen en de toekomstige in het jaar 1835, tevens inhoudende: een overzigt over alle kometen wier omloopstijden met meerdere of mindere juistheid zijn bepaald. Met eene kaart, den weg voorstellende, welken de komeet van Halley, bij hare toekomstige verschijning, aan den sterrenhemel zal afleggen. 'sGravenhage, Gebr. van Cleef, 1835. 196 p. fold. map.
ICJ; OkU

1591
Kaiser, Friedrich. Voorloopig verslag van de waarnemingen op de Komeet van Halley, gedurende het eerste tijdvak harer verschijning in 1835. Algemeene konst- en letterbode, 4. dec. 1835: 394–399. AP15.A5, 1835

1592
Kak kometa Galle͡ia vstri͡etits͡ia s zemleĭ. I͡Aroslavl', Tip. A. G. Fal'k, 1910. 29 p.

1593
Kamenskiĭ, Mikhail M. Chto takoe komety? *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg.* Izvi͡estīi͡a, vyp. 15, dek. 1909: 196–230. illus., port. QB1.R9, v. 15

A general treatment that gives much attention to Halley's Comet, the 1910 return of which occasioned the publication. An offprint was also issued.

1594
Kamieński, Michał. Apparition of Halley's Comet in 1705 BC. *In* Poznańskie Towarzystwo Przyjaciół Nauk. Bulletin. Sér. B, Sciences mathématiques et naturelles. Livr. 15; 1958/59. Poznań, 1960. p. 135–141. illus. Q1.A1P6, v. 15

References (10): p. 141.

1595
Kamieński, Michał. Approach of Halley's Comet to the earth in 467 B.C. *In* Poznańskie Towarzystwo Przyjaciół Nauk. Bulletin. Sér. B, Sciences mathématiques et naturelles. Livr. 16; 1960/61. Poznań, 1962. p. [5]–8. illus. Q1.A1P6, v. 16

References (3): p. 8.

1596
Kamieński, Michał. Astronomia w służbie chronologii. Urania (Kraków), r. 42, mar. 1971: 66–74. QB1.U7, v. 42

The longest section, "Kometa Halleya jako zegar dziejów ludzkości" (p. 70–74), discusses Halley's Comet at the time of the biblical flood, fixing the year of Abraham's birth, at the fall of Troy, in the time of King David, and in the vision of the prophet Jeremiah.

1597
Kamieński, Michał. Badania nad periodycznością komety Halley'a. Researches on the periodicity of Halley's Comet. *In* Polska Akademia Umiejętności, *Kraków. Wydział Matematyczno-Przyrodniczy.* Bulletin in-

ternational, sér. A, sciences mathématiques, mai/juin 1949: 100–140; jan./fév. 1951: 33–38. AS142.K5412, 1949A, 1951A

References (14): p. 139–140.

Contents: pt. 1. Determination of the average period of its revolution.—pt. 2. The past of Halley's Comet (preliminary results).

1598

Kamieński, Michał. Comet Halley in 1163 BC and the fall of Troy. Acta astronomica, v. 8, no. 2, 1958: 62–70. illus. QB1.A1715, v. 8

References (8): p. 70.

1599

Kamieński, Michał. Comets of 1200 BC, 1194 BC, 1175 BC as well as those of 2770 AM and 2795 AM were probably appearances of Halley's Comet in 1163 BC. *In* Poznańskie Towarzystwo Przyjaciół Nauk. Bulletin. Sér. B, 15; 1958/59. Poznań, 1960. p. 125–130. illus. Q1.A1P6, v. 15

References (13): p. 130.

1600

Kamieński, Michał. Halley's Comet and early chronology. *In* British Astronomical Association, *London*. Journal, v. 66, Mar. 1956: 127–131. QB1.B75, v. 66

References (7): p. 131.

1601

Kamieński, Michał. Halley's Comet in the times of Hammurabi. *In* British Astronomical Association, *London*. Journal, v. 70, Sept. 1960: 304–313. illus. QB1.B75, v. 70

References (16): p. 313.

1602

Kamieński, Michał. Katastrofa Posejdonii a kometa Halleya. Urania (Kraków), r. 29, lip. 1958: 193–197. QB1.U7, v. 29

1603

Kamieński, Michał. Kometa Dawida. Urania (Kraków), r. 34, luty 1963: 34–37. illus. QB1.U7, v. 34

"... King David's vision of an angel with a sword in his hand could be the apparition of Halley's Comet about 1010 B.C."

1604

Kamieński, Michał. Kometa Halleya, 2320 p.n.e.–1910 n.e. Urania (Kraków), r. 26, stycz. 1955: 8–15. illus., port. QB1.U7, v. 26

1605

Kamieński, Michał. Kometa potopu biblijnego (kometa Halley'a z r. 3850 p.n.e.). Urania (Kraków), r. 38, maj 1967: 136–140. QB1.U7, v. 38

1606

Kamieński, Michał. Nieznana kometa z roku około 2008 przed Chr. była prawdopodobnie kometą Halleya. Postępy astronomii, t. 6, stycz./mar. 1958: 10–14. QB1.P835, v. 6

References (7): p. 14.

1607

Kamieński, Michał. Orientational chronological table of modern and ancient perihelion passages of Halley's Comet, 1910 A.D.–9541 B.C. Acta astronomica, v. 11, no. 4, 1961: 223–229. QB1.A1715, v. 11

References (8): p. 229.

1608

Kamieński, Michał. Preliminary determination of the time of the next perihelion passage of Halley's Comet in 1986. Acta astronomica, v. 12, no. 4, 1962: 227–231. QB1.A1715, v. 12

References (4): p. 231.

1609

Kamieński, Michał. The probable apparition of Halley's Comet in 1857 B.C. *In* Poznańskie Towarzystwo Przyjaciół Nauk. Bulletin. Sér. B, Sciences mathématiques et naturelles. Livr. 15; 1958/59. Poznań, 1960. p. 131–134. Q1.A1P6, v. 15

References (9): p. 134.

1610

Kamieński, Michał. The probable apparition of Halley's Comet in 2320 B.C. Acta astronomica, v. 6, no. 1, 1956: 3–23. illus. QB1.A1715, v. 6

References (8): p. 23.

1611

Kamieński, Michał. Researches on the periodicity of Halley's Comet. pt. 3. Revised list of ancient perihelion passages of the comet. Acta astronomica, v. 7, no. 2, 1957: 111–118. illus. DN-Ob

References (5): p. 118.

1612

Kamieński, Michał. Rola komety Halleya w astronomii i w chronologii. Postępy astronomii, t. 6, kwiec./czerw. 1958: 57. QB1.P835, v. 6

1613

Kamieński, Michał. Unknown comet about 2008 B.C. was probably Halley's Comet. *In* British Astronomical Association, *London.* Journal, v. 70, Sept. 1960: 314–317. QB1.B75, v. 70

References (7): p. 317.

1614

Kamikaze mission to a comet. Discover, v. 1, Oct. 1980: 12. illus. Q1.D57, v. 1

On the Giotto mission to Halley's Comet planned by the European Space Agency.

1615

Kamoun, Paul G., Gordon H. Pettengill, *and* Irwin I. Shapiro. Radar detectability of comets. *In* Comets. Edited by Laurel L. Wilkening with the assistance of Mildred Shapley Matthews. With 48 collaborating authors. Tucson, University of Arizona Press [1982] (Space science series) p. 288–296. QB721.C648 1982

References (16): p. 295–296.

Although Halley's Comet is one of three the authors believe could be detected by radar within the next five years, the chances for its detection are considered slight, because of its position in relation to the facilities at Arecibo and Goldstone.

1616
Kane, Van R. Come explore a comet. Astronomy, v. 9, July 1981: 24, 26. illus. QB1.A7998, v. 9

The director of the Halley Fund urges support and explains the importance of the proposed U.S. Halley Intercept Mission.

1617
Kane, Van R. The Halley Fund. Astronomy, v. 9, May 1981: 36. QB1.A7998, v. 9

Letter soliciting contributions to a fund established by a nonprofit space organization "to push for a U.S. mission to Halley's comet."

1618
Kane, Van R. Halley Fund update. Delta Vee update, v. 1, summer 1981: 3. port.

1619
Karmilov, A. Kometa Gallei͡a. Odessa, Tip. Tekhnik, 1910. [8] p.

1620
Kasten, Volker. Kommende Erscheinungen berühmter Kometen. Sterne und Weltraum, 14. Jahrg., Feb. 1975: 63–64. QB1.S854, v. 14

Discusses the forthcoming returns of Encke's Comet, Halley's Comet, and Comet Swift-Tuttle.

1621
Kastner, Karl W. G. Der Komet vom Jahre 1682, oder der Halley'sche Komet. *In his* Handbuch der Meteorologie, für Freunde der Naturwissenschaft entworfen. 2. Bandes 1. Abth. Erlangen, Bei J. J. Palm und E. Enke, 1825. p. 562–567. ICU; MH; NN

1622
Kater, J. De komeet van Halley. Hemel en dampkring, 6. jaarg., juli, oct. 1908, maart 1909: 45–46, 88–89, 172–173; 7. jaarg., oct., dec. 1909, jan., maart 1910: 91–92, 124, 129–131, 184–185; 8. jaarg., juni 1910, feb. 1911: 17, 158. illus. QB1.N43, v. 6–8

Mostly short items, some of a historical nature, some with ephemerides. The June 1910 item reproduces a sketch of the comet made by Chr. Schepp on May 26.

1623
Kater, J. Naar aanleiding van de komeet van Halley. Hemel en dampkring, 8. jaarg., mei 1910: 1–7. QB1.N43, v. 8

1624
Kazakova, R. K., V. A. Kotin, O. V. Papkov, A. K. Platonov, *and* K. G. Sukhanov. Issledovanie pri͡amykh traektoriĭ poleta k nekotorym periodi-

cheskim kometam. Kosmicheskie issledovanii͡a, t. 19, maĭ/ii͡un′ 1981: 377–391. illus. QB500.K63, v. 19

References (11): p. 390–391.

Halley's Comet is among those studied.

An English translation, "An Investigation of Direct Flight Trajectories to Some Periodic Comets," appears in *Cosmic Research*, v. 19, Nov. 1981, p. 260–271 (QC801.K613, v. 19).

1625

Keeling, Bertram F. E. Observations of Halley's Comet. Observatory, v. 34, Apr. 1911: 161. DN-Ob

Reports on photographs taken Feb. 5, Mar. 4, and Mar. 8, and the changing magnitude of the comet as determined photographically.

1626

Keeling, Bertram F. E. Photographic observation of Halley's Comet at the Khedivial Observatory, Helwan, Egypt, 1909, August 24, by Mr. Knox Shaw with the Reynolds Reflector. Astronomische Nachrichten, Bd. 183, Nr. 4386, 1. Feb. 1910: columns 295–296. QB1.A77, v. 183

1627

Keitch, Graham S. The Giotto mission. *In* British Astronomical Association, *London*. Journal, v. 92, Aug. 1982: 243. QB1.B75, v. 92

Report of a talk given by David Hughes at a meeting of the Association's Comet Section, Apr. 3, 1982, in London.

1628

Keller, Edgar. A "fan's" fancy. Life, v. 55, May 26, 1910: 971. illus. AP101.L6, v. 55

A man standing on the globe of the earth holds a baseball bat and is about to swing at the approaching comet.

1629

Keller, Horst U. Feedback of the dust coma on the evaporation process. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979*. Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 57–60. illus.

NASA accession no. N80–22207.

References (8): p. 59–60.

1630

Keller, Horst U., *and others*. A Halley Multicolour Camera. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 105–117. illus.

NASA accession no. N82–14120.

References (4): p. 117.

"The Halley Multicolour Camera is designed to detect and image the nucleus of comet Halley. With this experiment, an international team of investigators wants to address the following major scientific objectives: to measure the nuclear size, shape and albedo and to observe the active sublimation process of the nucleus."

1631

Kelsey, Rayner W. Halley's Comet. American friend, v. 17, fifth month 12, 1910: 297–298. illus. BX7601.A4, v. 17

A diagram shows the relative positions of the comet, the earth, and the sun from Jan. 1 to May 18.

1632

Kempthorne, Henry N. [Halley's Comet] English mechanic and world of science, v. 91, May 20, 1910: 356. illus. T1.E5, v. 91

Letter to the editor accompanies five sketches of the comet made during a voyage from Sierra Leone to England in late April and early May. Another letter in the May 27 issue (p. 378) supplies the scale, which had been inadvertently omitted.

1633

Kempthorne, Philip H. Donati's Comet—Halley's Comet. English mechanic and world of science, v. 90, Dec. 10, 1909: 445. T1.E5, v. 90

Letter to the editor reporting an observation made Dec. 4 at Wyck Risington, Glos.

1634

Kendall, David G. The distribution of energy perturbations for Halley's and some other comets. *In* Berkeley Symposium on Mathematical Statistics and Probability, *4th, 1960*. Proceedings. v. 3. Contributions to astronomy, meteorology, and physics. Edited by Jerzy Neyman. Berkeley, University of California Press, 1961. p. 87–98. illus. QA276.B4, 4th, v. 3

References (17): p. 97–98.

1635

Kennon, William L. Halley's Comet. *In his* Astronomy, a textbook for colleges. Boston, Ginn [1948] p. 381–388. illus. QB43.K4

1636

Kepler, Johann. Ausführlicher Bericht, von dem newlich im Monat Septembri vnd Octobri diss 1607. Jahrs erschienenen Haarstern, oder Cometen, vnd seinen Bedeutungen. Sampt vorgehendem gantz newem vnd seltzamen, aber wolgegründetem Discurs. Was eigentlich die Cometen seyen, woher sie kommen, durch wen jhre Bewegung geregieret werden, vnd welcher gestallt sie dem menschlichen Geschlecht etwas anzudeuten haben. Hall in Sachsen, Gedruckt durch E. Hynitzsch, 1608. [20] leaves. diagr. NIC

Reprinted, with a facsimile of the title page, in Caspar and Hammer's edition of Kepler's *Gesammelte Werke*, Bd. 4 (München, C. H. Beck'sche Verlagsbuchhandlung, MCMXXXXI. QB3.K3 1937, v. 4), p. [55]–76.

The comet and/or this publication figure in several letters from and to Kepler during late 1607 and early 1608. Among these, to be found in the cited edition of the *Gesammelte Werke*, Bd. 16 (München, C. H. Beck'sche Verlagsbuchhandlung, MCMLIV), are the following—from Kepler: to Johann Georg Brengger in Kaufbeuren, Oct. 4, 1607, Marin de Cavalli in Prague, Oct. 5, Georg Friedrich von Baden, Oct. 10, and Gregor Eichler in Görlitz, Jan. 24, 1608; to Kepler: from Herwart von Hohenburg in Munich, Oct. 10, 1607, Johann Georg Brengger in Kaufbeuren, Oct. 30, Johann Reinhard Ziegler in Mainz, Nov. 1, Joachim Tanckius in Leipzig, Dec. 13 and 30, 1607, and Jan. 3, 1608 (all three dates old style), Erasmus von Starhemberg in Eferding, end of 1607, Gregor Eichler in Görlitz, Jan. 1, 1608, and Caspar Dornavius in Görlitz, Jan. 25.

1637
Kepler, Johann. De cometis libelli tres. I. Astronomicvs, theoremata continens de motu cometarum, vbi demonstratio apparentiarum & altitudinis cometarum qui annis 1607. & 1618. conspecti sunt ... II. Physicvs, continens physiologiam cometarum nouam ... III. Astrologicvs, de significationibus cometarum annorum 1607. & 1618. Avgvstae Vindelicorvm, Typis A. Apergeri, M.DC.XIX 138 [i.e. 157] p. illus., plates.
MB; MH; NN; NNC; PPL

Reprinted, with a facsimile of the title page, in Caspar and Hammer's edition of Kepler's *Gesammelte Werke*, Bd. 8 (München, C. H. Beck'sche Verlagsbuchhandlung, MCMLXIII. QB3.K3 1937, v. 8), p. [129]-262.

1638
Keppler, Erhard. Erforschung der Kometen durch in-situ-Messungen: Vorbeiflug am Halleyschen Kometen. Zeitschrift für Flugwissenschaften und Weltraumforschung, 4. Jahrg., Mai/Juni 1980: 157–162. illus.
TL503.W557, v. 4

References (5): p. 162.

1639
Kesslitz, Wilhelm von. Luftelektrische und erdmagnetische Beobachtungen am Hydrographischen Amte in Pola während der Passage des Halleyschen Kometen. Meteorologische Zeitschrift, Bd. 27, Juli 1910: 316–318.
QC851.M3, v. 27

1640
Key, Richard W. A spacecraft attitude and articulation control system design for the Comet Halley intercept mission. *In* Astrodynamics 81. Proceedings of the AAS/AIAA Astrodynamics Conference held August 3–5, 1981, North Lake Tahoe, Nevada. Edited by Alan J. Friedlander [and others San Diego, Calif., Univelt, 1982] (Advances in the astronautical sciences, v. 46, pt. 2) p. 853–865. illus. (AAS [paper] 81–193)
TL787.A6A2, v. 46, pt. 2

References (11): p. 864–865.

1641
Kiang, Tao. The cause of the residuals in the motion of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 162, no. 3, 1973: 271–287. illus.
DN-Ob

References (19): p. 286.

Shows that the periodicity in the residuals in perihelion time of Halley's Comet is "an inherent property of the 3-body configuration Sun-Jupiter-Halley."

1642
Kiang, Tao. Long propagation periods of residuals in the motion of a comet. *In* Dynamics of the solar system. Proceedings of the 81st symposium of the International Astronomical Union held in Tokyo, Japan,

23–26 May, 1978. Edited by Raynor L. Duncombe. Dordrecht, Boston, D. Reidel Pub. Co. [1979] (International Astronomical Union. Symposium, no. 81) p. 303–306. illus. QB500.5.D94
References (5): p. 306.
P/Halley, P/Crommelin, and P/Tempel-Tuttle are treated.

1643
Kiang, Tao *and* P. A. Wayman. The orbit of Halley's Comet. Nature, v. 241, Feb. 23, 1973: 520–521. Q1.N2, v. 241
References (4): p. 521.

1644
Kiang, Tao. The past orbit of Halley's Comet. *In* Asteroids, comets, meteoric matter; [papers presented at the 22d IAU colloquium held in Nice, April 4–6, 1972] Edited by Cornelia Cristescu, W. J. Klepczynski [and] B. Milet. [București] Editura Academiei Republicii Socialiste România, 1974. p. [171]–173. QB651.A87
References (5): p. 173.

1645
Kiang, Tao. The past orbit of Halley's Comet. *In* Royal Astronomical Society. Memoirs, v. 76, pt. 2, 1972: 27–66. illus. QB1.R5, v. 76
References (49): p. 57–58.

1646
Kielhauser, Ernst A. Beiträge zur Kenntnis der atmosphärischen Elektrizität. XLII. Luftelektrische Beobachtungen in Triest am 19. Mai 1910. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse.* Sitzungsberichte, 119. Bd., Abt. IIa, Juli 1910: 1069–1072. AS142.V311, v. 119. Abt. IIa
Briefly noted in the division's *Anzeiger*, 47. Jahrg., 30. Juni 1910, p. 263 (AS142.V315, v 47).

1647
Killip, Robert. [Halley's Comet] English mechanic and world of science, v. 90, Dec. 10, 1909: 445; v. 91, Feb. 4–11, June 3, 1910: 12, 34, 400. T1.E5, v. 90–91
Letters to the editor describing observations made at Southport (Lancs.) on Dec. 4, 1909; Dec. 4 and 18, 1909, and Jan. 3, 10, 12, and 21, 1910; Feb. 4; and May 23–25. In his last report the writer characterizes the comet as "a huge disappointment."

1648
Kineke, John H. Probe protection against cometary meteoroid attack. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP-153) p. 77–83. illus.
NASA accession no. N80-22211.
References (10): p. 83.

1649
King, James, *Vicar of St. Mary's, Berwick-upon-Tweed.* Halley's Comet and star-names. Berwick-upon-Tweed, Martin, 1910.

1650
Kippax, John R. Halley's Comet. *In his* Comets and meteors. [Chicago?] 1910. p. 59–82. illus. QB721.K5

1651
Kirch, Gottfried. Cometa anni 1682. Lipsiae observatus. *In his* Annus III. Ephemeridum motuum coelestium ad annum aerae christianae M. DC. LXXXIII. Lipsiae, Sumptibus autoris, Typis viduae J. Baveri [1683?] p. [47] illus.

Held by the British Library under shelfmark 532. d. 18.

Figure C on a plate following p. [16] shows the position of the comet near μ Virginis on Sept. 10, as seen "per tubum bipedalem."

1652
Kirch, Gottfried. Eilfertiger kurtzer Bericht, an einen guten Freund, von dem neuen Cometen dieses 1682. Jahrs, wie solcher in Leiptzig den 17. 18. 19. 20. 21. 22. und 23. Augusti früh und spät observiret worden. Nürnberg, W. M. Endter, 1682. 8 p.

1653
Kirch, Gottfried. Kurtzer Bericht, von dem neu-erschienenen Cometen, welcher itzt im Monat Augusti des 1682. Jahres am Himmel zusehen ist. [Leipzig, 1682] [8] p. illus.

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A cut on the title page shows the comet's path through the feet of Ursa Major, Aug. 18–21.

1654
Kirk, William F. Little Bobbie's pa. New York American, May 14, 1910: 18. illus. N&CPR

"Little Bobbie" tells how his father reported spending the night viewing the comet with a pal. The two men could not agree on how many tails they saw.

1655
Kirk, William F. Our Swede servant. New York American, May 17, 1910: 20. N&CPR

Steena is late serving breakfast because of a stiff neck from looking for the comet all night with her policeman suitor.

1656
Kirkwood, Daniel. Halley's Comet. *In his* Comets and meteors: their phenomena in all ages; their mutual relations; and the theory of their origin. Philadelphia, J. B. Lippincott, 1873. p. 18–24. QB749.K5

1657
Kissel, Jochen. Das Experiment PIA der ESA Mission Giotto, ein Gerät zur Massenanalyse kleinster Teilchen, die vom Halley'schen Kometen freigesetzt werden. *In* Gemeinsame Tagung des U.R.S.I.-Landesausschusses in der Bundesrepublik Deutschland und der Fachausschüsse Informations- und Systemtheorie und Wellenausbreitung der NTG, *Kleinheubach, 1982.*

Vorträge und Berichte. Hrsg. vom Fernmeldetechnischen Zentralamt. Darmstadt, 1983. (Kleinheubacher Berichte, Bd. Nr. 26) p. 83–86. illus.
AIAA accession no. A83–23383.
References (4): p. 86.
English abstract.
On the experiment to analyze the composition of dust particles emitted by the comet.

1658
Kissel, Jochen. The Particulate Impact Analyzer, an instrument to analyze small particles released by Halley's Comet. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris. European Space Agency, 1981. (ESA SP–169) p. 53–60. illus.
NASA accession no. N82–14115.
References (39): p. 59–60.

1659
Klein, *Prof. Dr.* Die Rückkehr des Halleyschen Kometen. Daheim, 45. Jahrg., 27. März 1909: 19–20. AP30.D15, v. 45

1660
Klein, Jerry. When Halley's Comet bemused the world: fifty years ago, earthlings awaited with both pleasure and fear a visitor from space. New York times magazine, May 8, 1960: 45, 57, 60, 62. illus.
AP2.N6575, 1960

1661
Klinger, J. Observational needs for thermal modeling of comet nuclei. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982*. Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 115–121. illus.
References (10): p. 120.
Discussion: p. 121.
Points out the kind of data that should be sought by observers of P/Halley in order "to check some ideas on the heat balance of comet nuclei published recently . . . as well as other models of the nucleus."

1662
Klinger, J. Some consequences of a phase transition of water ice on the heat balance of comet nuclei. Icarus, v. 47, Sept. 1981: 320–324. illus.
QB1.I3, v. 47
A paper presented at IAU Colloquium 61, "Comets: Gases, Ices, Grains, and Plasma," held at Tucson, Arizona, Mar. 11–14, 1981.
References (12): p. 324.
Considers surface temperatures under two extreme situations of spheres of water ice of about 1 km radius moving on three different orbits with a common perihelion distance of 8 AU. "We come to the conclusion that an ice body moving on the orbit of Tempel 2 must contain crystalline ice and the variations of the surface temperature must be smoothed out in an important way. In the case of Halley's orbit, we suppose that the center of the ice body still contains large amounts of amorphous ice."

1663

Klinglesmith, Daniel A., *and* Jürgen Rahe. Image enhancement of structures in the coma of Comet Halley 1910 II. *In* American Astronomical Society. Bulletin, v. 12, no. 1, 1980: 437. QB1.A255, v. 12

Abstract of a paper presented at the 155th meeting of the American Astronomical Society, Jan. 13–18, 1980, at San Francisco, California.

1664

Klinglesmith, Daniel A. The Interactive Astronomical Data Analysis Facility—image enhancement techniques applied to Comet Halley. *In* Modern observational techniques for comets; proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. (JPL publication 81–68) p. 223–231. col. illus. DN-Ob

By digitizing two series of photographs of the comet taken May 25 and 26, 1910, at Helwan, Egypt, and subjecting them to computer analysis, the author tries to show "not only that Comet Halley had, on at least one occasion, jet like streamers emitted from the nucleus, but also that an interactive analysis facility like the IADAF is capable of providing the tools needed to extract the ultimate amount of information from astronomical imagery."

The fourth of the seven color illustrations also appears on the cover of the volume and is reproduced on the cover of *Astronomy*, v. 11, May 1983 (QB1.A7998, v.11).

1665

Klinkenberg, Dirk. Aanmerkingen over de comeet-sterre, die in de maanden September en October 1757 verscheenen is; benevens een onderzoek, of het de zelfde comeet geweest zy, die in het jaar 1682 is waargenomen. Uitgezogte verhandelingen uit de nieuwste werken van de societeiten der wetenschappen in Europa, 2. deel, 8. stukje, 1757: 61[illegible]-630. fold. plate. Q4.U3, v. 2

By comparing various features of their orbits, the author concludes that the comet of 1757 is not the one whose return was predicted by Halley.

1666

Klinkenberg, Dirk. Kort berigt, wegens eene comeet-sterre, die zich in den jaare 1757 of 1758, volgens het systema van Newton, Halley, en andere sterrekundigen, zal vertoonen. *In* Hollandsche maatschappij der wetenschappen, *Haarlem*. Verhandelingen. 2. deel. Te Haarlem, By J. Bosch, 1755. p. 275–318. fold. plates. Q57.H2, v. 2

1667

Klinkenberg, Dirk. Verhandeling over de staart-ster, van het jaar 1759: dienende tot bewys, dat het de zelfde komeet is geweest, waar de wederkomst door Halley was voorzegd. Uitgezogte verhandelingen uit de nieuwste werken van de societeiten der wetenschappen in Europa, 5. deel, 19. stukje, 1760: 372–399. fold. plate. Q4.U3, v. 5

1668

Klotz, Otto J. Magnetic observations. *In* Royal Astronomical Society of Canada. Journal, v. 4, May/June 1910: 227–228. QB1.R485, v. 4

Briefly reports observations made during the transit of Halley's Comet in the evening of May 18, at Ottawa and Grassett.

1669

Klotz, Otto J. [Terrestrial magnetism: passage of Halley's Comet] *In* Canada. *Dept. of the Interior. Astronomical Branch.* Report of the Chief Astronomer for the year ending March 31, 1911. Ottawa, Printed for J. de L. Taché, Printer to the King's Most Excellent Majesty, 1915. ([Canada. Parliament] Sessional paper no. 25a, 1913) p. 65–66. QB296.C22, 1911

"Observations for Declination, taken at Grasett, Ont., on May 18, 1910, preceding, during, and following the computed passage of Halley's Comet" are presented in tabular form.

1670

Knigge, Rüdiger, *and* Jürgen Rahe. The Helwan Observatory photographs of Comet Halley 1910 II. Bamberg, 1979. 42 p. illus. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 133) DN-Ob

Reproduces 113 photographs taken during the period Feb. 2–June 26, 1910, by Harold Knox-Shaw with the 30-inch reflector at the Khedivial Observatory in Helwan, Egypt.

1671

Knight, Nan B. The comet shottishe. The new society dance for 1910–1911, adopted by the National Convention of Dancing Masters. New York, J. H. Remick [1910] 5 p. M31.K

For piano.

Cover design includes a portrait, presumably of the composer.

1672

Knobel, Edward B. Abstract of a lecture on Chinese astronomy. *In* British Astronomical Association, *London.* Journal, v. 19 June 1909: 337–345. illus. QB1.B75, v. 19

Presented at a meeting of the Association on May 26, 1909; comments made by members appear on p. 328–329 of the same issue.

At the close of the lecture, the 1066 apparition of Halley's Comet as recorded in Chinese sources is discussed. An illustration shows a Chinese planisphere on which the author has marked the comet's path.

1673

Knobel, Edward B. On the astronomical observations recorded in the "Nihongi," the ancient chronicle of Japan. *In* Royal Astronomical Society. Monthly notices, v. 66. Dec. 1905: 67–74. QB1.R7, v. 66

The comet of A.D. 684: p. 72–73.

1674

Knopf, Otto H. J. Beobachtungen auf der Universitäts-Sternwarte zu Jena. Astronomische Nachrichten, Bd. 187, Nr. 4484, 16. März 1911: columns 393–394. QB1.A77, v. 187

Includes observations of Halley's Comet made Jan. 8–June 5, 1910.

1675

Knox-Shaw, Harold. Diagram illustrating the path of Halley's Comet near perihelion, 1910. Cairo scientific journal, v. 4, Jan. 1910: 25–26. illus.

The diagram, showing the relative positions of the sun, the earth, and the comet while the last is within the earth's orbit (Feb. 1–May 29), faces p. 25.

1676
Knox-Shaw, Harold. Further positions of Halley's Comet. *In* Helwan, Egypt. al-Marsad. Bulletin, no. 3, Dec. 1911: 18–21.
From plates taken Nov. 11, 1910–May 18, 1911.

1677
Knox-Shaw, Harold. Observations of Halley's Comet made at the Khedivial Observatory, Helwan. Cairo, Printed at the National Print. Dept., 1911. 18 p. 22 plates. (Survey Department paper, no. 23) QB723.H2K6
At head of title: Ministry of Finance, Egypt. Survey Department.
The plates reproduce 56 photographs taken during the period Apr. 16–June 11, 1910.

1678
Knox-Shaw, Harold. Observations of the brightness of Halley's Comet. *In* Helwan, Egypt. al-Marsad. Bulletin, no. 2, Sept. 1911: 11–13.
Includes table showing visual and photographic magnitude of the comet as observed Aug. 24, 1909–May 18, 1911.

1679
Knox-Shaw, Harold. On the appearance of Halley's Comet on 1910 May 20. *In* Helwan, Egypt. al-Marsad. Bulletin, no. 4, Jan. 1912: 27.
QB4.H49, no. 4

1680
Knox-Shaw, Harold. Photographic observations of Halley's Comet 1909 c. Astronomische Nachrichten, Bd. 182, Nr. 4364, 20. Okt. 1909: columns 335–336. QB1.A77, v. 182
Gives positions from photographs taken Sept. 13, 15, and 16.

1681
Knox-Shaw, Harold. Positions of Halley's Comet and of Comet 1910 a from photographs taken at the Khedivial Observatory, Helwân. *In* Royal Astronomical Society. Monthly notices, v. 71, May 1911: 573–577.
QB1.R7, v. 71
The photographs were taken Aug. 24, Sept. 13, 15, and 16, and Oct. 15 and 22, 1909, and Jan. 27, 1910.

1682
Knox-Shaw, Harold. The return of Halley's Comet. Cairo scientific journal, v. 3, Sept. 1909: 235–236.
See also the brief note by B. F. E. Keeling, "Halley's Comet," in the Nov. 1909 issue, p. 288, announcing that visitors will not have access to the Reynolds reflector as it will be used for photographing the comet.

1683
Knox-Shaw, Harold. A suggested method of determining the stellar brightness of a faint comet. *In* Royal Astronomical Society. Monthly notices, v. 71, Jan. 1911: 232–238. QB1.R7, v. 71

"This note originated with the large discrepancy between the magnitudes of Halley's comet on 1910 November 11, as estimated by Professor Barnard, who observed it visually, and by myself from a photographic plate." Most of the material used to test the method consisted of 15 photographs of Halley's Comet taken Aug. 24, 1909 – Jan. 16, 1910.

1684

Kobold, Hermann A. Auffindung des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 182, Nr. 4355, 12. Sept. 1909: columns 179–180. QB1.A77, v. 182

Publishes Wolf's telegram announcing his recovery of the comet on Sept. 11 at Königstuhl (Heidelberg).

1685

Kobold, Hermann A. Zusammenstellung der Kometenerscheinungen im Jahre 1909. *In* Astronomische Gesellschaft. Vierteljahrsschrift, 45. Jahrg., 1./2. Heft, 1910: 105–112. QB1.A7, v. 45

Includes bibliographic references.

"Halleyscher Komet 1909c": p. 110–111.

1686

Kobold, Hermann A. Zusammenstellung der Kometenerscheinungen im Jahre 1910. *In* Astronomische Gesellschaft. Vierteljahrsschrift, 46. Jahrg., 1. Heft, 1911: 56–69. QB1.A7, v. 46

Includes bibliographic references.

"Halleyscher Komet 1909c": p. 56–61.

The entire article, omitting only the lists of references at the end of each section, is reprinted as "Die Kometenerscheinungen im Jahre 1910" in *Jahrbuch der Astronomie und Geophysik*, Jahrg. 22, 1911, p. 69–78 (Leipzig, E. H. Mayer, 1912. Q9.J13, v. 22). The section on Halley's Comet appears on p. 69–73.

1687

Kobold, Hermann A. Zusammenstellung der Kometenerscheinungen im Jahre 1911. *In* Astronomische Gesellschaft. Vierteljahrsschrift, 47. Jahrg., 1./2. Heft, 1912: 24–39. QB1.A7, v. 47

Includes bibliographic references.

"Halleyscher Komet 1909c": p. 24–26.

1688

Kobold, Hermann A. Zusammenstellung der Kometenerscheinungen im Jahre 1912. *In* Astronomische Gesellschaft. Vierteljahrsschrift, 48. Jahrg., 1./2. Heft, 1913: 33–44. QB1.A7, v. 48

Includes bibliographic references.

"Halleyscher Komet 1909c"; p. 42–43.

1689

Kobrick, M., *and* Donald K. Yeomans. Prospects for comet mass determination during a rendezvous mission. *In* American Astronomical Society. Bulletin, v. 11, no. 3, 1979: 567. QB1.A255, v. 11

Abstract of a paper presented at the 11th meeting of the society's Division for Planetary Sciences, Oct. 23–26, 1979, at Clayton, Missouri.

1690

Køhl, Torvald. Halley's Komet. Illustreret tidende, 51. aarg., 30. jan. 1910: 226–227. illus., ports. AP42.I3, v. 51

1691

Köhler, Horst W. Halley-Programme. Physikalische Blätter, 39. Jahrg., Juni 1983: 150. QC1.D415, v. 39

On the International Halley Watch and the space missions planned in Japan, the Soviet Union, and the European Space Agency. A correction appears in the August issue, p. 299.

1692

Königsberg. Universität. *Sternwarte.* Beobachtungen des Halleyschen Kometen. *In its* Astronomische Beobachtungen auf der Königlichen Universitäts-Sternwarte in Königsberg, von F. W. Bessel. 21. Abth., vom 1. Januar bis 26. December 1835. Königsberg, Gedruckt bei E. J. Dalkowski, 1844. p. 81–93 [i.e. 94] QB4.K77, v. 21

"Oerter der mit dem Halleyschen Kometen verglichenen Sterne" appears on p. 95.

1693

Koerber, Felix. [Der Halley'sche Komet] Naturwissenschaftliche Wochenschrift, 24. Bd., 10. Okt. 1909: 656. Q3.N9, v. 24

Reports Wolf's discovery and reprints most of Matkevich's ephemeris, covering the period Oct. 4, 1909–May 22, 1910.

1694

Köstner, Sebastian. Cometa. Kurtze beschreibung vnd vermutungen von den Effectibus vnd wirckungen, dess wunderbaren geschwindlauffenden Cometen vnd Schwantzsterns welcher erstlich den 15. vnd 16. Septembris Alten- oder 25. und 26. Newen im newen Weinmon, Mitwoch vor Michaelis Newen Kalenders in Böhmen vnd Deutschland, in diesem ablauffenden 1607. Jahr, im himlischen Zeichen dess Löwen grsehen [sic] worden. [Nürnberg, V. Fuhrmann] 1608. [12] p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 76.

1695

Kövesligethy, Radó. [A Halley-féle üstökös] Teermészettudományi közlöny, 41. köt., 1909. aug. 15., okt. 15.: 586, 713; 42. köt., 1910. feb. 15., ápr. 15., máj. 15., jun. 15., aug. 15.: 190, 364, 436, 438, 509, 651, 653. Q44.B93, v. 41–42

News notes in his monthly feature, "A csillagos ég."

1696

Kövesligethy, Radó. A Halley-féle üstökös. Természettudományi közlöny, 42. köt., 1910. ápr. 15.: 337–355. illus. Q44.B93, v. 42

A lecture given Mar. 11, 1910, at a meeting of the K.M. Természettudományi Társulat.

1697

Kohler, Pierre. Le rendez-vous avec la comète de l'histoire. Science & vie, t. 131, déc. 1980: 24–30, 172. col. illus.

"L'Agence spatiale européenne (ESA) vient de voter les crédits pour envoyer un engin scientifique à la rencontre de la comète de Halley qui doit repasser en 1986 dans notre ciel, pour la trente-troisième fois depuis que l'Histoire l'a remarquée."

1698
Koller, Marian. Schreiben des Herrn Koller, Directors der Sternwarte in Kremsmünster, an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 313–316; 13. Bd., Nr. 297–299, 28. Jan.–3. Feb. 1836: columns 143–144, 153–160, 173–176. QB1.A77, v. 12–13

Reports observations made during the period Aug. 21–Nov. 13, 1835.

1699
[De Komeet van Halley] Algemeene konst- en letterbode, 28. aug.–11. sept. 1835: 159–160, 174–175, 192; 29. jan., 12. feb. 1836: 80, 126. AP15.A5, 1835–36

Brief reports on the recovery and observation of the comet.

1700
De Komeet van Halley. Hemel en dampkring, 7. jaarg., sept. 1909: 76. QB1.N43, v. 7

A short note announcing Wolf's discovery of the comet on Sept. 11.

1701
De Komeet van Halley. De Zee, 32. jaarg., jan. 1910: 28–32. V5.Z4, v. 32

Story about a lecture given by Nijland, based on a report in *De Nieuwe Courant*.

1702
De Komeet van Halley en Christus' geboorte. De Navorscher, 59. jaarg., aflevering 1/2, 1910: 31–32. AG307.N3, v. 59

Copies from *Nieuwe Courant* a report on an essay by Arthur Stentzel published in the *Hamburger Nachrichten*. The title of the essay is translated as "De Ster der wijzen en den leeftijd van Jezus."

1703
Komet, Astronomen und Aberglaube. Die Abendschule, Jahrg. 56, 2. Juni 1910: 705–706. AP31.A2, v. 56

On strange doings all over the world on the night of May 18/19.

1704
Komet Halley—1910. Sterne und Weltraum, 20. Jahrg., Mai 1981: 183. illus. QB1.S854, v. 20

The Volkssternwarte Köln is soliciting recollections of those who saw the comet in 1910.

See also Manfred Gaida's letter in *Sky & Telescope*, v. 62, Dec. 1981, p. 552, announcing that the Cologne amateur observatory would welcome eyewitness reports in any language.

1705
Der Komet im Cottage. Die Fackel, 12. Jahr, 31. Mai 1910: 21–24. AP30.F15, v. 12

The writer expresses indignation at the inappropriateness of holding a comet party, involving supper, concert, and cabaret, on the evening of May 18 in the garden—not of an inn, but of a mental hospital.

1706
Der Komet und sein Einfluss. Morgenblatt für gebildete Stände, 17. Nov. 1835: 1099–1100. AP30.M6, 1835

The Berlin correspondent notes the public's disappointment at the comet's faintness and fleeting appearance; its influence seems to have been minimal—"Er hat weder Krieg, noch guten Wein gebracht, weder Missernte, noch eine Geissel Gottes."

1707
Der Komet von 1835. Sein Erscheinen in fasslicher Darstellung für den Bürger und Landmann beschrieben, nebst Belehrungen über Kometen im Allgemeinen, von Dr. Demophilos. [Breslau, Hentze, 183–]

1708
Der Komet von 1835, und die von ihm bezeichneten früheren astronomischen Stadien. Bibliothek der neuesten Weltkunde, 3. Th. 1835: 214–218. AP30.B58, 1835

1709
Kometa Gallei͡a. Iskry, g. 10., 2 mai͡a 1910 g.: 132–133. illus., ports. AP50.I8, v. 10

The only text is in the form of captions.
Several cartoons featuring the comet appear on p. 135 of this issue.

1710
Kometa Gallei͡a. Niva, g. 41., 1. mai͡a 1910 g.: 341–345. illus. AP50.N55, v. 41

1711
Kometa Gallei͡a i ei͡a predstoi͡ashchai͡a vstri͡echa s zemlei͡u. Mni͡enīe professora K. Flammariona o kometi͡e Gallei͡a. Moskva, Izd. A. D. Sazonova, 1910. 16 p.

1712
Kometa Gallei͡a i predstoi͡aschchee stolknovenīe ei͡a s zemlei͡u. Prokhozhdenīe zemli cherez khvost komety. S.-Peterburg, Tip. A. I. Bi͡elokopytova, 1910. 16 p. illus.

1713
Kometa Halleya oczekiwana u nas w maju 1910. Warszawa, Księg. Mazowiecka, 1910. 30 p. illus.

1714
Kometa Halley'a w 1910 roku. Wyd. popularne. Łódź, S. Miszewski, 1910. 32 p.

Contents: 1. O wszechświecie.—2. O kometach.—3. O komecie Halley'a.

1715

Die Kometen des vierten Jahrzehends vom neunzehnten Jahrhunderte, 1830–1840; insbesondere jene von 1832, 1833, 1835, 1836 und 1839, nebst vorausgehenden Ansichten über den Bau der Kometen, ihre Gestalt und Beschaffenheit, die Lage ihrer Bahnen, und ihre Anzahl überhaupt. Zur Beruhigung Jener, welche die Zerstörung unseres Wohnortes durch die Zusammenstossung eines Kometen mit demselben befürchten. Grätz, Verlag der F. Ferstl'chen Buchhandlung, 1831. 111 p. fold. illus. WU

"Der Hallye'sche Komet": p. [93]–96.

A Russian translation, *O kometakh chetvertago desi͡atili͡etii͡a XIX-go vi͡eka, 1830–1840*, was published in Sanktpeterburg in 1832.

1716

Kometen oder Schweifsterne. Die Abendschule, Jahrg. 56, 10. März 1910: 518–522. illus., port. AP31.A2, v. 56

Much of the article relates to Halley's Comet.

1717

Kometenbeobachtungen im Ballon. Wiener Luftschiffer-Zeitung, 9. Jahrg., 15. Apr. 1910: 135. TL503.W5, v. 9

Includes texts of a letter from Victor Silberer, president of the Austrian aero club, to the director of the Vienna observatory, offering to provide a balloon ascent in April to permit observations of Halley's Comet at a height of 3–4,000 m, and the reply from Josef von Hepperger. Brief reports on the comet flights, which took place on Apr. 29, May 10, and May 18, can be found under the heading "Österreichischer Aëro-Klub" in the issues of 1. Mai–1. Juni, p. 159, 182, and 200, and in the club's 1910 *Jahres-Bericht*, p. 22–24 (Wien, 1911. TL503.O3, 1910). See also the more extensive article by Heinrich Jaschke describing the Apr. 29 flight (item 1559).

1718

Eine Kometenexpedition nach Norwegen. Sirius, 43. Bd., März 1910: 66. DN-Ob

Concerns the plans of Professor Birkeland of the University of Christiania to study the effects of the comet on the aurora borealis and on magnetic phenomena in general.

1719

Ho Komētēs tou Halley. To ethnikon asteroskopeion kata tēn eikosaetian, 1890–1910. Athēnai, Ek tou typograph. P. A. Petrakou, 1910. 44 p.

1719a

Koniec świata w roku 1910 z powody komety Halley'a. Łódź, S. Książek, 1910. 16 p.

1720

Konkoly-Thege, Miklós. Spektroskopische Beobachtungen von Kometen. Astronomische Nachrichten, Bd. 188, Nr. 4499, 20. Mai 1911: columns 189–194. QB1.A77, v. 188

"Halleyscher Komet 1909 c": columns 190–192.

1721
Konkoly-Thege, Miklós. Üstökösök spektroskopos megfigyelése 1884-től 1910-ig, tekintettel a Halley-üstökös megfigyelésére. Mathematikai és természettudományi értesitő, 29. köt., 3. füzet, 1911: 372–412. illus.
AS142.M343, v. 29

1722
Konkoly-Thege, Miklós. Az üstökösről. II. Az üstökös-spektrumokról. Az Időjárás, 14. évf., 1910. dec.: 365–380. DAS

Includes reports of atmospheric and geomagnetic observations made at Ó-Gyalla on May 18–19.

1723
Konopleva, Valentina P., *and* Leonid M. Shul'man. On the sizes of cometary nuclei. *In* The Motion, evolution of orbits, and origin of comets. International Astronomical Union ... Symposium no. 45 held in Leningrad, U.S.S.R., August 4–11, 1970. Edited by G. A. Chebotarev and E. I. Kazimirchak-Polonskaya, and B. G. Marsden. Dordrecht, D. Reidel Pub. Co., 1972. (International Astronomical Union. Symposium no. 45) p. [277]–282.
QB721.M67

References (23): p. 282.

To demonstrate the inconsistent data available on the dimensions of cometary nuclei, the authors provide a table of estimates, from various authorities, of the radius of the nucleus of P/Halley. Their table of derived nuclear radii for periodic comets whose total number of revolutions since discovery is 10 or more includes figures for P/Halley, and they predict that its absolute magnitude in 1986 will be about 5.6.

1724
Konschegg, A. Untersuchungsergebnisse über die Zusammensetzung der Atmosphäre während der Passage des Halleyschen Kometen im Jahre 1910. Meteorologische Zeitschrift, Bd. 29, Okt. 1912: 480–481.
QC851.M3, v. 29

1725
Kopff, August. Der Halleysche Komet. Aus der Natur, 6. Jahrg., 15. Okt. 1910: 417–425.

1726
Kosińska, Stanisława. Kometa Halleya. Wszechświat, t. 29, 16 stycz. 1910: 46.

1727
Kosińska, Stanisława. Kometa Halleya po 20 maja 1910 r. Wszechświat, t. 29, 12 czerw. 1910: 381–382. illus.

1728
Kostersitz, Karl. Der Halleysche Komet. *In* Wiener Verein zur Förderung des physikalischen und chemischen Unterrichtes. Vierteljahrsberichte, 15. Jahrg., Juni 1910: 19–39.
Q44.V57, v. 15

Presented at the meeting of Mar. 19, 1910.

An expanded version, issued under the title *Kometen und Bergobservatorien* (Wien, Frick, 1910. 23 p.), is item B1933 in the *Catalogue alphabétique*, t. 3 (Bruxelles, Impr. du Moniteur belge, 1927. Z5156.B92, v. 3), of the Bibliothèque de l'Observatoire royal de Belgique.

1729
Kostinskiĭ, Sergeĭ K. K vozvrashchenii͡u komety Galleı͡a. Nikolaev, 1910. 50 p. illus.

1730
Kotelow, K. J. von. Über die Ionisation der Atmosphäre in Jekaterinoslaw während des Durchganges des Halleyschen Kometen. *In* Deutsche physikalische Gesellschaft. Verhandlungen, Jahrg. 13, 15. Apr. 1911: 307–312.
QC1.D41, v. 13

1731
Krabbe, Alfred. Helligkeit des Kometen Halley. Sterne und Weltraum, 21. Jahrg., Sept. 1982: 345. illus. QB1.S854, v. 21

1732
Krabbe, Johann. Gründtliche Beschreibung von dem newen Cometen. [Wolfenbüttel? 160 ?] 2 leaves.
Zinner 4143a.

1733
Kramer, E. N., *and* I. S. Shestaka. O sisteme komety Galleı͡a, η-Akvarid i Orionid. *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ tsirkuli͡ar, no. 302, 15 mart. 1983: 4. DN-Ob

1734
Kramer, E. N., V. I. Musiĭ, *and* I. S. Shestaka. Ob odnoĭ dinamicheskoĭ kharakteristike kometnykh orbit. Astronomicheskiĭ vestnik, t. 13, ı͡anv./mart 1979: 42–49. illus.
References (11): p. 49.
Abstract in English.
An English translation, "A Certain Dynamic Characteristic of Cometary Orbits," appears in *Solar System Research*, v. 13, July 1979, p. 33–39 (QB501.S64, v. 13).
"The phase distance D between orbit elements . . . is evaluated to study perturbations of the oscillatory elements of periodic comets, and to discover new and confirm known families of comets." Halley's Comet is among those investigated.

1735
Kramer, E. N., V. I. Musiĭ, *and* I. S. Shestaka. Vzaimnoe fazovoe rasstoı͡anie orbit i kometno-meteornye kompleksy. *In* Komety i meteory. no. 29/31. Dushanbe, Izd-vo Donish, 1980. p. 83–96. illus. DN-Ob
References (16): p. 95–96.
"Mutual phase distances (*D*-characteristics) of comet orbits have been computed, complexes picked out with characteristics less than 0.3, the change of phase-distance between orbits of periodic comets Encke, Halley and others at different perihelion passages have been studied.

"Among periodic and nonperiodic comets some groups have been detected, forming complexes according to *D*-criterion and characterized by mutual nearness of orbits."

1736
Krankowsky, D., *and others.* The Giotto Neutral Mass Spectrometer. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 127–130.

NASA accession no. N82–14122.

1737
Krankowsky, D. Some aspects of mass spectrometry for a fast fly-by mission. *In* Workshop on Cometary Missions, *Bamberg, 1979.* Cometary missions; proceedings. [Edited by] W. I. Axford, H. Fechtig, J. Rahe. Bamberg, 1979. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 132) p. 183–185. DN-Ob

1738
Kraus, Karl. Der Komet in Wien. Die Fackel, 12. Jahr, 31. Mai 1910: 1–3. AP30.F15, v. 12

1739
Krause, Arthur. Die Erscheinung des Halley'schen Kometen 1909–1910. Himmel und Erde, 23. Jahrg., Nov. 1910: 49–62. illus. Q3.H6, v. 23

1740
Krautwadel, Michael. Anzaygung grüntlicher natürlicher vrsachen der natur, wachsung, vnderscheyd, farbē, gestalt, bewegung, bedeütnus &c. aller vñ sunderlich diss newlich erschinen Cometen. Landsperg, 1531. [63] p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 4.

A cut on the title page depicts the gods Mars and Jupiter within a circle. The comet appears over Jupiter's head.

1741
Krebs, Wilhelm. Die Erde im Schweife des Kometen Halley und ein ähnliches Ereignis vor 804 Jahren. Die Umschau, 14. Jahrg., 9. Apr. 1910: 295–296. illus.

The anticipated passage of the earth through the tail of Halley's Comet recalls similar events that took place on June 26, 1819, and possibly on Feb. 5, 1106.

An English version, "Conets' Tails and the Earth; the Earth's Passage Through the Tail of a Comet 804 Years Ago," appears in *Scientific American Supplement*, v. 69, May 21, 1910, p. 332 (T1.S52, v. 69).

See also R. Baer's "Passage de la terre dans la queue de la comète de 1861" in the *Bulletin* of the Société astronomique de France, 24. année, sept. 1910, p. 407–409 (QB1.S6, v. 24).

1742

Krebs, Wilhelm. Die erdmagnetische Störung am Tage des Kometendurchgangs im Mai 1910. Meteorologische Zeitschrift, Bd. 27, Okt. 1910: 475–476. QC851.M3, v. 27

1743

Kreil, Karl. Osservazioni della cometa d'Halley negli anni 1835 e 1836. *In* Effemeridi astronomiche di Milano per l'anno 1838. Milano, Dall'imp. regia stamperia, 1837. Appendice, p. [49]–64. illus. QB8.I6, 1838

Observations were made during the period Sept. 1, 1835–Apr. 19, 1836. A list of comparison stars is included.

1744

Kreil, Karl. Schreiben des Herrn Kreil, Adjuncten an der Sternwarte in Mailand, an den Herausgeber. Astronomische Nachrichten, 14. Bd., Nr. 335, 13. Juli 1837: columns 367–370. illus. QB1.A77, v. 14

Details of 20 observations of Halley's Comet during the period Dec. 30, 1835–Apr. 19, 1836, as well as a description and sketch of a new kind of micrometer.

1745

Kreil, Karl. Schreiben des Herrn Kreil, Adjuncten bei der Sternwarte in Mailand, an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 299, 3. Feb. 1836: columns 181–182. QB1.A77, v. 13

Reports observations made Dec. 30 and 31, 1835, and Jan. 1, 1836.

1746

Kritzinger, Hans H. Die Begegnung der Erde mit dem Schweif des Halleyschen Kometen; ein Nachruf. Daheim, 46. Jahrg., 13. Aug. 1910: 12. AP30.D15, v. 46

1747

Kritzinger, Hans H. Beobachtungen des Halleyschen Kometen. Sirius, Bd. 44, Feb. 1911: 32–35. illus., plates. DN-Ob

The plates reproduce in color three sketches by the author showing the comet's appearance on May 1, May 22, and June 5, 1910.

1748

Kritzinger, Hans H. Der Stern der Weisen und der Halleysche Komet. *In his* Der Stern der Weisen. Astronomisch-kritische Studie. Gütersloh, C. Bertelsmann, 1911. p. [1]–20. ICJ; MH; NN; PPWe

Bibliographic footnotes.

Examines and rejects the arguments for identifying the star of Bethlehem with the 12 B.C. appearance of Halley's Comet.

1749

Kronk, Gary. Mr. Halley's hairy star. Astronomy, v. 9, Sept. 1981: 16–22. illus. (part col.), port. QB1.A7998, v. 9

Gives considerable attention to the history of orbit calculations for the comet, searches of European and Chinese annals for records of its earlier appearances, the comet's physical characteristics, and the meteor streams associated with it. The cover of the issue reproduces a color photograph of Comet West (1976).

1750
Kruse, David H. Low-thrust mission to Halley's Comet. Astronautics & aeronautics, v. 7, Mar. 1969: 18. illus. TL501.A688A25, v. 7

1751
Kruse, David H., *and* M. K. Fox. Trajectory analysis aspects of low-thrust and ballistic rendezvous missions to Halley's Comet. AIAA/AAS Astrodynamics Conference, Princeton, New Jersey/August 20–22, 1969. New York, American Institute of Aeronautics and Astronautics, 1969. 13 p. illus. (AIAA paper 69–933) Sci RR

References (8): p. 8–9.

"Results of a trajectory analysis of a low-thrust mission mode for a rendezvous with Halley's Comet in 1985 are compared with those of ballistic modes."

1752
Kučera, Oton. Beobachtungen auf der Sternwarte während des Schweifdurchganges. *In* Hrvatsko prirodoslovno društvo. Glasnik, god. 22, druga polovina, 1910: 81. Q4.H75, v. 22

1753
Kulin, György. A Halley-üstökös 1986. évi visszatérése. Föld és ég, 10. évf., 1975. okt.: 146–147. Q4.F64, v. 10

1754
Ein kurtzer Bericht, von dem Lauff unnd Bewegung des newen Cometsterns, welcher im Septemb. und Octob. des 1607. Jahres uberall ist gesehen worden. [n.p., 1607] 3 leaves.

Detached from an unidentified larger work. Held by the Herzog August Bibliothek Wolfenbüttel under shelfmark Nx 36 (4).

1755
Kurtzverfasster historischer Bericht, aller der jenigen Cometen, so innerhalb hundert Jahren, das ist: vom Jahr 1566. biss auff das jetzige 1664. Jahr. Sonderlich den 18. Decem. St. N. zu Augsburg, und dann ferner zu Nürnberg, Strassburg, Hamburg, Lübeck, Leipzig und anderer Orten ist erschienen. Samt dero darauf erfolgeten Würckungen. [n.p.] 1664. [8] p.

Held by the British Library under shelfmark 8560. bbb. 7. (1.).

The appearance of the 1607 comet on Sept. 16, and its consequences—a plague in Saxony, Thuringia, and elsewhere, a seven-year famine, and incursions by the Turks—are treated in a paragraph on p. [5]

1756
Kurze Nachricht von dem Cometen, welcher in dieser Woche sichtbar wird. Hannoverische Beyträge zum Nutzen und Vergnügen, 29. Stück, 9. Apr. 1759: columns 463–464. AP30.H2, 1759

1757
Labadie-Lagrave, G. À propos de la comète de Halley. Le Figaro, supplément littéraire, nouv. sér., 6. année, 14 mai 1910: 3. N&CPR

Touches on the 1066 appearance of the comet and its effect on the Norman invasion of England, and on the career of Edmond Halley.

1758
La Caille, Nicolas L. de. Observations de la cométe qui a reparu en l'année 1759. *In* Académie des sciences, *Paris.* Mémoires de mathématique et de physique, tirés des registres de l'Académie royale des sciences, de l'année M. DCCLX. [A Paris, De l'Impr. royale, M. DCCLXVI] p. 53–62. Q46.A13, 1760

Two tables show locations of the comet determined during 22 observations (one in April 1759 and the rest in May) and the positions of comparison stars.

1759
La Caille, Nicolas L. de. Sur le calcul des élémens de la théorie de la cométe qui paroît maintenant. *In* Académie des sciences, *Paris.* Mémoires de mathématique et de physique, tirés des registres de l'Académie royale des sciences, de l'année M. DCCLIX. [A Paris, De l'Impr. royale, M. DCCLXV] p. 522–524. Q46.A13, 1759

What is probably the earliest recorded designation of the comet by Halley's name occurs in this report.

1760
Lagrange, Eugène, *physicist.* La comète de Halley. Ciel et terre, 30. année, 1. août 1909: 371–372. QB1.C5, v. 30

Includes an ephemeris for the period Sept. 11–Dec. 25, 1909.

1761
Lagrange, Eugène, *physicist.* Phénomènes magnétiques pendant le passage de la comète de Halley, les 17, 18 et 19 mai 1910. Ciel et terre, 31. année, sept. 1910: 381. QB1.C5, v. 31

Briefly discusses reports published in *Meteorologische Zeitschrift.*

1762
Lainé, R., *and* F. Felici. The Giotto dust protection system. *In* European Space Agency. ESA bulletin, no. 32, Nov. 1982: 36–42. illus. TL787.E88a, 1982

"Giotto's planned encounter with comet Halley in March 1986 will take the spacecraft into the dust cloud produced by the interaction between the comet and the Sun. The spacecraft will be protected from hypervelocity [68 km/s] dust-particle impacts by a dual-sheet bumper shield, composed of a thin front sheet (1 mm aluminium), and a thick rear sheet (13.5 mm kevlar/foam sandwich) separated by 25 cm."

1763
Lais, Giuseppe. Osservazioni astrofotografiche sulla Cometa Halley, 1909–1910. *In* Pontificia accademia delle scienze, *Rome.* Atti della Pontificia accademia romana dei nuovi Lincei. t. 64; 1910/11. Roma, 1911. p. [49]–53. plate. AS222.R7, v. 64

Photographs taken May 25, May 29, and June 3.

1764
Lakits, Ferencz. A Halley-féle üstökösről. Természettudományi közlöny, 41. köt., 1909. ápr. 1.: 265–272. illus., plate. Q44.B93, v. 41

1765
Lakits, Ferencz. A Halley-üstökös régebbi megjelenései és a betlehemi csillaggal való azonossága. Természettudományi közlöny, 42. köt., 1910. marcz. 15.: 302. Q44.T93, v. 42

Answers a query from S. K. (see p. 300).

1766
Lakits, Ferencz. A Halley-üstökösről. Természettudományi közlöny, 41. köt., 1909. decz. 15.: 847. Q44.T93, v. 4

Summarizes the latest news of the comet and provides a brief ephemeris for the second half of December.

1767
[Lalande, Joseph Jérôme Le Français de] Histoire de la comète observée en 1759. *In* France. *Bureau des longitudes.* Connoissance des temps pour l'année 1761. au méridien de Paris, publiée par l'ordre de l'Académie royale des sciences, et calculée par M. de la Lande. A Paris, De l'Impr. royale, M. DCCLIX. p. 213–216.

1768
Lalande, Joseph Jérôme Le Français de. Lettre au sujet de la comète dont on attend le retour. Mémoires pour l'histoire des sciences et beaux-arts, nov. 1757: 2850–2863. AS161.T8, 1757

1769
Lalande, Joseph Jérôme Le Français de. Lettre au sujet de la comète dont on attend le retour. Mémoires pour l'histoire des sciences et beaux-arts, avril 1759, 1. v.: 924–931. AS161.T8, 1759

Dated 6 mars 1759.

1770
Lalande, Joseph Jérôme Le Français de. Lettre de M. de la Lande, de l'Académie royale des sciences, à M. Fréron. L'Année littéraire, 1759, t. 4, lettre 10: 240–243.

Dated 10 juillet 1759.

On Clairaut's calculations of the perihelion date.

1771
Lalande, Joseph Jérôme Le Français de. Mémoire sur le retour de la comète de 1682, observé en 1759, avec les élémens de son orbite pour cette dernière apparition. *In* Académie des sciences, *Paris.* Mémoires de mathématique et de physique, tirés des registres de l'Académie royale des sciences, de l'année M. DCCLIX. [A Paris, De l'Impr. royale, M.DCCLXV] p. 1–40. Q46.A13, 1759

"Une partie de ce Mémoire fut lûe dans l'Assemblée publique du 25 Avril 1759, dans le temps où la Comète paroissoit encore, & la suite du Mémoire fut lûe au mois de Juillet, après que la Comète eut disparu."

A report on the first part of the memoir appears in an article entitled "Rentrée de l'Académie des sciences" in *L'Année littéraire*, 1759, t. 2, p. 333–336. A summary of, and comments on, this part of the memoir can be found in *Journal encyclopédique*, 15. juin 1759, p. 41–56 (AP20.J8, 1759, v. 4).

1772

Lambert, Johann H. Anmerkungen aus den nachgelassenen Handschriften des seeligen Herrn Prof. Lambert, über den Cometen, welcher 1759 wiedergekommen. *In* Astronomisches Jahrbuch für das Jahr 1800. Berlin, Bey dem Verfasser, und in Commission bey G. A. Lange, 1797. p. 119–125. illus. QB8.G4, 1800 Rare Bk. Coll.

Predicts that the next perihelion passage will take place in mid-October 1833. The four figures referred to in the text are included in a plate attached to the last page of the volume (p. 251).

1773

Lambs, Alphonse. Un dernier mot sur la comète. La France illustrée, 37. année, 28 mai 1910: 308–309. AP20.F7, 1910

1774

Lambs, Alphonse. Réflexions sur la comète. La France illustrée, 37. année, 29 jan. 1910: 104–105. AP20.F7, 1910

Illustrations (a portrait of Halley, the Bayeux Tapestry panel depicting the comet, and a reduced version of Rudaux's diagram showing the paths of the earth and the comet during early May) appear in the issue of 9 avril, p. 224–225.

1775

Lamont, Johann von. Ueber die Beobachtungen des Halley'schen Cometen mit dem grossen Refraktor der k. Sternwarte bei München. Astronomische Nachrichten, 14. Bd., Nr. 316, 24. Aug. 1836: columns 57–58. QB1.A77, v. 14

1776

Lampton, William J. Concerning comets. Lippincott's magazine, v. 85, June 1910, Walnuts and wine: [xxii] AP2.L55, v. 85

Facetious.

1777

Lampton, William J. Halley. New-York tribune, v. 70, May 19, 1910: 6. N&CPR

The first line of this poem, "Did anybody here see Halley?" recalls a popular song of the day, "Has Anybody Here Seen Kelly?" The verses are reprinted in the *Washington Post* of May 20, p. 6, and (with the author's name omitted) in the *Literary Digest*, v. 40, May 28, 1910, p. 1095 (AP2.L58, v. 40).

This author contributed several other poems on the comet to the press. "Halley's Comet" appeared in the *New York Times*, v. 59, Apr. 24, 1910, magazine section, p. 7, while the *World* (New York) published "The Comet" on May 16, p. 10; "The Morning After," on May 19, p. 8; and "The Comet's Comments," on May 20, p. 8.

1778

Lamy, Philippe L., *and* Serge Koutchmy. Large-scale photographic observations, photometry, colorimetry and polarimetry of cometary tails. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 243–256. illus., col. plate.

References (16): p. 255–256.

Discussion: p. 256.

The authors propose an organized net of identical cameras to assure the adequate performance of large-scale observations, photometry, colorimetry, and polarimetry of Halley's Comet.

1779
Lancaster Brown, Peter. The story of Halley's Comet. *In his* Comets, meteorites, and men. London, R. Hale [1973] p. 22–37. illus., plates, port. QB721.L36 1973

See index for additional references.

1780
Landgraf, Werner. Über die Bahn des Halleyschen Kometen. Sterne und Weltraum, 22. Jahrg., Feb. 1983: 59. QB1.S854, v. 22

References (12): p. 59.

Presents a table of orbital elements for 16 apparitions (837–1986).

1781
Lange, Max. Der Komet. Frankfurt an der Oder, 1910.

For voice and piano.

1782
[Langereux, Pierre] Le "Shuttle" observera la comète de Halley. Air & cosmos, 20. année, 26 juin 1982: 46, 52.

1783
Lanos, Henri. An astronomical observatory in the upper air: taking observations of Halley's Comet from a balloon. Graphic, v. 81, May 28, 1910: 765. illus. AP4.G7, v. 81

Full-page drawing, with caption, shows three observers with instruments in the basket of a balloon; a huge comet appears in the background sky.

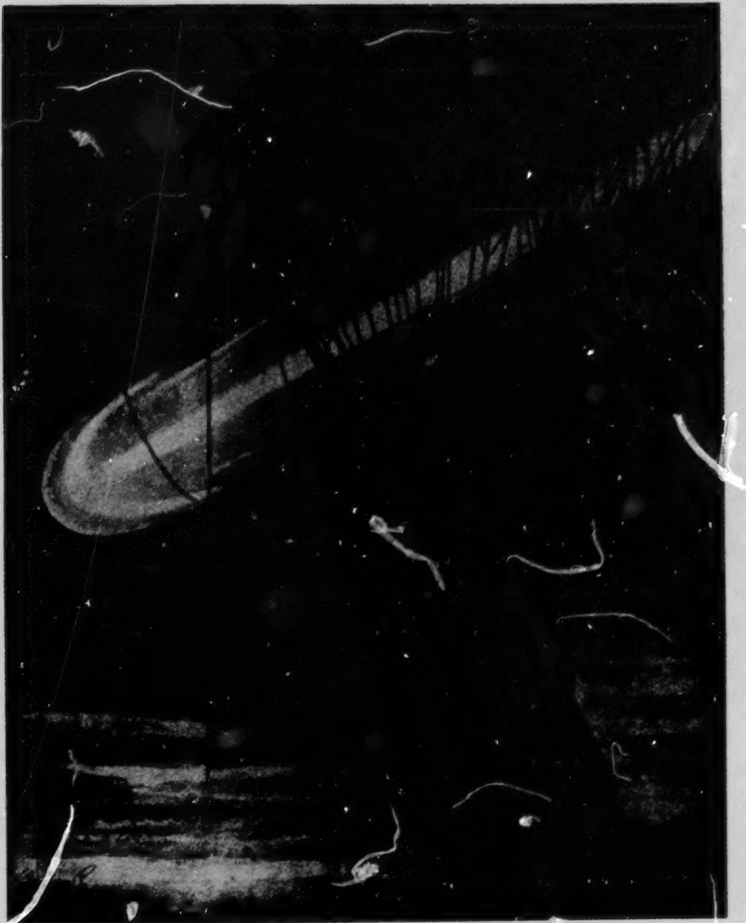
1784
Lap, Henryk A. Co nam wróżą komety? Czyli kometa Halley'a a mniemany koniec świata. Warszawa, St. Rzymski, 1910. 16 p. illus.

1785
[Lardner, Dionysius] The approaching comet. Edinburgh review, v. 61, Apr. 1835: 82–128. AP4.E3, v. 61

Reviews Arago's *Des comètes en général*, de Pontécoulant's *Notice sur la comète de Halley*, and Sir John Herschel's *Observations on Biela's Comet.*

Reprinted in the *Museum of Foreign Literature, Science, and Art*, v. 27, July 1835, p. 48–68 (AP2.M89, v. 27).

1786
Lardner, Dionysius. Halley's Comet. *In his* Popular lectures on science and art; delivered in the principal cities and towns of the United States. v. 1. New York, Greeley & McElrath, 1846. p. [169]–190. illus. Q171.L3 1846, v. 1



"An Astronomical Observatory in the Upper Air: Taking Observations of Halley's Comet From a Balloon," was published in the *Graphic*, v. 81, May 18, 1910, p. 765. The original caption reads: "Last week, before the transit of Halley's Comet across the sun's disk, balloon ascents were made from several places on the Continent with a view to observing the comet from as great a height as possible, and collecting samples of the air at various altitudes in the hope of obtaining traces of the gases composing the comet's tail. Both at home and abroad 'sounding balloons' were also sent up provided with instruments for testing the effect of the comet's passage on the atmosphere."

The artist, Henri Lanos, a genre painter and watercolorist working in Paris, has exaggerated the comet in an attempt to suggest its telescopic appearance. References to published reports of aerial observations made at this time may be traced under the heading "Balloon ascensions" in the topical index.

With a few deletions, this lecture was reprinted in Lardner's edition of Arago's *Popular Lectures on Astronomy* (New-York, Greeley & McElrath [1845] 96 p. illus. QB44.A642), where it forms the first 10 pages of Lecture 11, "Comets."

1787
Lardner, Dionysius. Royal Institution.—Weekly evening meetings, nos. XII. & XIII. Dr. Lardner on Halley's Comet. Printing machine, v. 3, May 9–16, 1835: 306–308, 325–326. AP4.P85, v. 3

The substance of lectures presented on Apr. 10 and May 1.

A shorter summary appears under the heading "Dr. Lardner on Halley's Comet" in *Records of General Science*, v. 1, June 1835, p. 465–469 (Q1.R27, v. 1), and a brief report, entitled "Halley's Comet," in the *Gentleman's Magazine*, new ser., v. 3, June 1835, p. 643 (AP4.G3, n.s., v. 3).

1788
Large, Arlen J. Halley Fund seeks to raise $100,000 for study of comet. Space enthusiasts plan gift for NASA, which lacks money for such a project. Wall Street journal, v. 197, Apr. 10, 1981: 33. N&CPR

1789
Large, Arlen J. The ion engine's glamorous mission is chasing comets. Device may power spacecraft that observes Halley's—if NASA gets funding. Wall Street journal, v. 194, Oct. 11, 1979: 1, 41. N&CPR

1790
Larkin, Ralph B. The approach of Halley's Comet. North American review, v. 190, Aug. 1909: 194–199. AP2.N7, v. 190

1791
Larkin, Ralph B. Halley's Comet. Forward, v. 29, Jan. 22, 1910: 29. illus. AP201.F7, v. 29

1792
A Last chance for Halley. Astronomy, v. 9, Mar. 1981: 59–60. illus. QB1.A7998, v. 9

On the Halley Intercept Mission proposed by the NASA Comet Science Working Group in a report (TM–82386) issued in November 1980.

1793
The Latest observations of Halley's Comet. Popular astronomy, v. 20, Jan. 1912: 63. illus. QB1.P8, v. 20

Percival Lowell notes that the comet was photographed at Lowell Observatory on later dates than those cited in an article in the Dec. 1911 issue (see item 1295). A chart shows positions of the comet on photographs taken by Lampland, May 15–June 1, 1911.

1794
The Latest on Halley from JPL. Comet news service, Feb. 4, 1982: 1–2. DN-Ob

1795
Latour, B. La comète de Halley. Cosmos, t. 62, 16 avril 1910: 428–431. illus.

Sketches show the comet's course and the earth's orbit, Dec. 5, 1909–Aug. 2, 1910, and the comet's path among the constellations, Apr. 24–May 30, 1910.

1796
Latour, B. La comète de Halley et la légende de son excommunication. Cosmos, t. 62, 15 jan. 1910: 75–79. facsim.

Bibliographic footnotes.

About Pope Calixtus III and the comet of 1456.

1797
Lauf des Halley'schen Kometen. Naturwissenschaftliche Wochenschrift, 25. Bd., 30. Jan., 27. Feb., 27. März, 1., 29. Mai, 26. Juni 1910: 75, 140, 205, 279–280, 351, 414. illus. Q3.N9, v. 25

Information and advice for observers, sometimes under different headings, included in the monthly column "Himmelserscheinungen."

1798
Laughlin, Mary Q. To Halley's Comet. For The Public. Public, v. 13, May 13, 1910: 447. AP2.P87, v. 13

Poem.

1799
Laugier, Paul A. E., *and* Émile Plantamour. Éléments elliptiques de la comète de Halley. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 5, 16 oct. 1837: 553–554. Q46.A14, v. 5

1800
Laugier, Paul A. E. Mémoire sur quelques anciennes apparitions de la comète de Halley, inconnues jusqu'ici. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 23, 27 juil. 1846: 183–189. Q46.A14, v. 23

Proposes comets of 1378, 1152, 760, and 451 as earlier apparitions of Halley's Comet.

1801
Laugier, Paul A. E. Note sur l'apparition de la comète de Halley en 1378. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 16, 8 mai 1843: 1003–1006. Q46.A14, v. 16

Also published as "Note sur une ancienne apparition de la comète de Halley en 1378, inconnue jusqu'ici," in *Connaissance des temps*, 1846, Additions, p. [99]–101 (QB8.F9, 1846).

1802
Laugier, Paul A. E. Note sur la première comète de 1301. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 15, 21 nov. 1842: 949–951. Q46.A14, v. 15

A similar article with the same title appears in *Connaissance des temps*, 1846, Additions, p. 97–98 (QB8.F9, 1846).

Laugier tried to identify this comet with that of 1842; others have suggested that it may have been an appearance of Halley's Comet. See also the brief "Note sur la première comète de l'année 1301, tiré de la grande collection des historiens de la Chine," by Stanislas Julien and Édouard Biot, in *Comptes rendus hebdomadaires*, 14 nov. 1842, p. 929–930, and Laugier's "Note sur la comète decouverte à l'observatoire de Paris, le 28 octobre 1842," in the issue for 7 nov., p. 895–896.

1803
Launière, Claude de. Astronomie—une invitée de marque. Québec science, v. 20, sept. 1981: 12. illus.
On plans for spacecraft observations of Halley's Comet.

1804
Lazzarino, Orazio. Osservazioni della cometa Halley 1910 II fatte nel R. Osservatorio di Capodimonte. Astronomische Nachrichten, Bd. 197, Nr. 4713, 13. Feb. 1914: columns 141–144. QB1.A77, v. 197
Made Feb. 6–July 6, 1910.

1805
Leach, C. Observations of Halley's Comet. Nature, v. 83, May 5, 1910: 277. Q1.N2, v. 83
Letter to the editor describing observations made with field glasses at Malta, Apr. 24–26. Subsequent reports from this observer are included in articles published in the issues of May 12 (p. 321), May 19 (p. 348), May 26 (p. 384, with sketch reproduced on p. 385), June 2 (p. 410), June 16 (p. 471), and, in v. 84, July 7 (p. 19).

1806
Lebel, Joseph A. Observation de l'ionisation de l'air en vase clos pendant le passage de la comète de Halley. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 150, 23 mai 1910: 1372–1373. Q46.A14, v. 150

1807
LeBlanc, D. R., *and* L. L. Schumacher. Pointing control for the International Comet Mission. *In* Rocky Mountain Guidance and Control Conference, *Keystone, Colo., 1980.* Guidance and control 1980; proceedings of the annual Rocky Mountain Guidance and Control Conference held February 17–21, 1980, Keystone, Colorado. Edited by Louis A. Morine. San Diego, Calif., Published for the American Astronautical Society by Univelt [1980] (Advances in the astronautical sciences, v. 42) p. 373–394. illus. TL787.A6A2, v. 42
"AAS 80–021."
"Propelled by the ion thrusters on the Solar Electric Propulsion Stage (SEPS), the ICM spacecraft would spend 30 days at Halley and one year at Tempel-2."

1808
Lecointe, Georges. Halleyscher Komet 1909 c. Astronomische Nachrichten, Bd. 182, Nr. 4366, 1. Nov. 1909: columns 373–374. QB1.A77, v. 182
A telegram reporting an observation made at Uccle on Oct. 21 by G. van Biesbroeck.

1809

Le Coultre, Fridtjof. La comète de Halley et les comètes 1908^{c}, 1910^{a}, 1911^{b}. *In* Société vaudoise des sciences naturelles, *Lausanne*. Bulletin, v. 49, juin 1913: 105–139. illus. Q67.L3, v. 49

"Comète de Halley 1909 *c*": p. 112–137.

Includes a list of photographs (p. 136).

Also published in *Bulletin d'astronomie*, no 4, 1912, p. [95]–129 (Lausanne, Impr. Réunies), issued by the Faculté des sciences of the Université de Lausanne.

1810

Lecouturier, Charles H. [Histoire de la comète de Halley] *In his* Panorama des mondes; astronomie planetaire. Dessins astronomiques par M. Ch. Bulard. Paris, Aux Bureaux du Musée des sciences, 1858. p. 410–415. plate. 4/QB-260

Some of the historical events associated with the comet's appearances in 837, 1066, and 1456 are described on p. 424–425.

1811

Ledger, Edmund. Halley's and other comets. Nineteenth century and after, v. 60, Sept. 1906: 379–395. AP4.N7, v. 60

1812

Ledger, Edmund. Halley's Comet in 1682. *In* British Astronomical Association, *London*. Journal, v. 20, June 1910: 491–492. QB1.B75, v. 20

Reports, in a letter to the editor, the description and discussion of the comet's appearance by Robert Hooke, as published in *The Posthumous Works of Robert Hooke* (London, Printed by S. Smith and B. Walford, 1795. Q157.H78 Rare Bk. Coll.).

See also another letter by this author, "Some Early Comet Observations," in the *Observatory*, v. 5, Dec. 1882, p. 369–370 (QB1.O2, v. 5), which also mentions Hooke's observations of the 1682 comet.

1813

Lee, Oliver J. Observations of Halley's Comet. Astronomical journal, v. 26, Dec. 30, 1909: 53. QB1.A3, v. 26

Made Sept. 15–Oct. 26 with the 2-foot reflector of the Yerkes Observatory.

1814

Lee, Oliver J. Photographic search for Halley's Comet with the two-foot reflector of Yerkes Observatory. Popular astronomy, v. 17, Mar. 1909: 160–161. QB1.P8, v. 17

Reports negative findings of a search carried out Dec. 22, 1908–Jan. 19, 1909, on the basis of Seagrave's ephemeris.

1815

Lee, Oliver J. Photographs of Halley's Comet. Astrophysical journal, v. 30, Oct. 1909: 237–238. plate. QB1.A9, v. 30

Taken Sept. 16, 17, 24, and 26, 1909.

Reprinted (with plate) in the *Journal* of the Royal Astronomical Society of Canada, v. 3, Sept./Oct. 1909, p. 341–343 (QB1.R485, v. 3). The plate also appears, with a short article entitled "Photographien des Halleyschen Kometen," in Sirius, 42. Bd., Dez. 1909, p. 281. The Sept. 24 and 26 photographs are reprinted in *Scientific American*, v. 101, Oct. 16, 1909, p. 276, and all four, in v. 102, Apr. 16, 1910, p. 317 (T1.S5, v. 101–102).

1816

Lee, William R. To Halley's Comet. Munsey's magazine, v. 43, Apr. 1910: 12. AP2.M8, v. 43

Poem.

1817

Lehmann, Jacob W. H. Versuch, die Berechnungen zur Bestimmung der Wiederkehr des Halleyschen Kometen aufs Reine zu bringen. Astronomische Nachrichten, 12. Bd., Nr. 287, 25. Juli 1835: columns 369–400. QB1.A77, v. 12

Includes an ephemeris covering the period July 1–Nov. 26, part of which was reprinted in the *Comptes rendus hebdomadaires des séances*, t. 1, 3 août 1835, p. 9 (Q46.A14, v. 1).

1818

Lehmann, Jacob W. H. Die Wiedererscheinung des Halley'schen Kometen im Herbste dieses Jahres 1835, nach den zuverlässigsten Elementen und mit Berücksichtigung aller seit dem Jahre 1607 stattgefundenen Störungen durch die sieben Hauptplaneten und durch den Widerstand des Aethers. Potsdam, In Commission der Horvath'schen Buchhandlung, 1835. 52 p. fold. plate. MH; NNC

The plate shows the comet's path in the heavens, July 13–Nov. 6, 1835.

1819

Leik, Alois. Der Halleysche Komet und die Erde. Betrachtungen über die Begegnung dieser Himmelskörper und über die damit verbundenen Gefahren für die Menschen. Dresden, R. Lincke, 1910. 15 p.

1820

Leland, Samuel. P. Halley's Comet now nearing us. Christian herald, v. 33, May 11, 1910: 458. illus. BR1.C63, v. 33

1821

Le Monnier, Pierre C. [Observations de la nouvelle comete] *In his* Histoire celeste; ou, Recueil de toutes les observations astronomiques faites par ordre du Roy. A Paris, Chez Briasson, M. DCC. XLI. p. 265–268.
CU; DN-Ob; IaU; MA; MB; MH
NN; NNC; NWM; OkU; RPB; ViU; WU

Observations of the comet of 1682 made during the period Aug. 26–Sept. 12 by Picard and La Hire.

1822

Le Monnier, Pierre C. Suite de l'apparition de la comète de 1758 & 1682, dont il est parlé à la page 181 du sécond Mercure d'avril. Mercure de France, juil. 1759, 1. v.: 140–145. AP20.M48, 1759 Rare Bk. Coll.

1823

Lennon, F. Halley's Comet. Irish ecclesiastical record, 4th ser., v. 27, June 1910: 561–576. BX801.I7, s. 4, v. 27

The return of the comet brings to mind its involvement in the striking advance of science that followed Newton's development of the laws of motion, and their application by Halley in predicting the return of the comet of 1682. The fulfillment of this prediction put paid to Descartes' competing theory of vortices. The author also discusses some other famous comets of the 18th and 19th centuries and the association of comets with meteor showers.

1824

Lenorovitz, Jeffrey M. ESA rejects NASA bid on joint Halley mission. Aviation week & space technology, v. 114, Jan. 12, 1981: 20. TL501.A8, v. 114

1825

Lenorovitz, Jeffrey M. ESA's Halley's Comet payload studied. Aviation week & space technology, v. 114, Feb. 16, 1981: 101, 103. illus. TL501.A8, v. 114

1826

Lenorovitz, Jeffrey M. Soviets express interest in joint comet program. Aviation week & space technology, v. 115, Oct. 5, 1981: 64, 69. illus. TL501.A8, v. 115

Details of Soviet, Japanese, and ESA plans, and prospects for international cooperation.

1827

Lensen, J. Elle vient. Bruxelles, Tan[illegible]iau, 1910. 21 p. (Causeries apologétiques, 4)

Cited in issue no. 4 of the *List des ouvrages imprimés acquis en 1910* published by the Bibliothèque royale de Belgique in Brussels.

1828

León, Luis G. El cometa de Halley. El Mundo ilustrado, año 17, 12 de jun. de 1910: [9] illus. AP63.M8, v. 17

Drawings show the comet's appearance in the sky on May 12 and May 21; there is also a sketch of the comet as seen through a telescope.

1829

León, Luis G. El cometa de Halley. *In* Sociedad Astronómica de México. Boletín mensual, t. 9, jul. de 1910: 161–169. illus., plates. QB1.S55, v. 9

The plates (inside the front cover of the issue and facing p. 176) show the appearance of the comet in the sky on May 7 and May 21.

1830

León, Luis G. Halley's Comet in Mexico. Popular astronomy, v. 18, Aug./Sept. 1910: 428–429. plates. QB1.P8, v. 18

Briefly describes observations made from Nov. 17, 1909, through June 8, 1910. The first plate, facing p. 422, reproduces a drawing of the comet as it appeared at 4:20 a.m. May 12. The second, facing p. 428, shows the curious aspect of the head on June 8. (The latter is lacking in LC's copy of this issue.)

1831
León, Luis G. El regreso del cometa de Halley. México, Carranza, 1909. 12 p.

Item 6332 in the *Catalogue alphabétique*, t. 1 (Bruxelles, Hayez, 1910. Z5156.B92, v. 1), of the Bibliothèque de l'Observatoire royal de Belgique.

1832
Leonard, Frederic C. Astronomical observations. English mechanic and world of science, v. 91, Apr. 15, 1910: 243. T1.E5, v. 91

Letter to the editor including report of observations of Halley's Comet made Dec. 29, 1909, and Feb. 10, 19, and 27, 1910, at Chicago. The appearance of the comet during February is described.

1833
Leonard, Frederic C. Observations of Halley's Comet. Popular astronomy, v. 18, Nov. 1910: 575. QB1.P8, v. 18

Text of a talk given before the Press Club of Chicago on May 17, describing observations made with a 3-inch refractor during the period Dec. 29, 1909–May 5, 1910.

1834
Lepil, Oldřich. Halleyova kometa. Rozhledy matematicko-fyzikální, roč. 36, červ. 1958: 280–283. illus. Q4.R75, v. 36

1835
Le Roy, Pierre. Lettre à M. le Comte de T*** sur la cométe de 1682, dont le retour a été annoncé par M. Halley & calculé par M. Clairaut. L'Année littéraire, 1759, t. 2, lettre 10: 217–228.

Dated 7 avril 1759.

See also, in lettre 14, a report on Lalande's "Mémoire sur le retour de la cométe de 1682" (p. 333–336).

1836
Le Roy, Pierre. Seconde lettre de M. le Roy, de l'Académie des sciences, à M. le Comte de Tressan. L'Année littéraire, 1759, t. 5, lettre 2: 27–47.

Dated 3 août 1759.

Protests anonymous attacks on Clairaut because his calculation of the perihelion date was a month off.

1837
Lersch, Bernhard Maximilian. Notizen über Kometenerscheinungen in früheren Jahrhunderten. *In* Akademie der Wissenschaften, *Vienna. Mathematisch-naturwissenschaftliche Klasse.* Sitzungsberichte, 89. Bd., 2. Abth., Mai 1884: 767–801. AS142.V311, v. 89

Gives references to sources—usually contemporary chronicles—in which the comets are mentioned. The following appearances of Halley's Comet (not always so identified) are included: 87 and 12 B.C. and A.D. 66, 141, 218, 295, 451, 530, 607/8, 684, 760, 837, 912 (?), 989, 1066, 1145, 1222, 1301, 1378, 1456, 1531, and 1682.

A supplement published in the *Sitzungsberichte*, 102. Bd., Abth. IIa, Nov. 1893, p. 1245–1260, provides additional data for most of these and an entry for that of 1607.

Both papers are briefly noted in the division's *Anzeiger*, 21. Jahrg., 15. Mai 1884, p. 111, and 30. Jahrg., 30. Nov. 1893, p. 276.

The first paper was reprinted in the *Wochenschrift für Astronomie, Meteorologie und Geographie*, neue Folge, 27. Jahrg., 3.–24. Dez. 1884, p. 389–391, 393–407, 409–416, and 28. Jahrg., 7. Jan. 1885, p. 3–8 (QB1.W8, n.F., v. 27–28).

1838

The Lesson of the comet's visit. New York American, May 19, 1910: 18. N&CPR

Editorial.

1839

Lettre à M.****, à Angoulême. Sur la comète. Mercure de France, mai 1759: 147–156. AP20.M48, 1759 Rare Bk. Coll.

1840

Lettre à M. le Chevalier Du Fresne De Timard, sur la comete de 1682. Mercure de France, avril 1759, 2. v.: 184–190. AP20.M48, 1759 Rare Bk. Coll.

1841

Lettre de M. Valz à M. Arago, sur la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 9 nov. 1835: 321–322. Q46.A14, v. 1

In addition to Valz's latest elements, presents comments by Poisson and Arago on Rosenberger's conclusions regarding the perturbation of the comet's orbit by the inner planets as published in *Astronomische Nachrichten*, 12. Bd., Nr. 276 (QB1.A77, v. 12).

Reprinted in Arago's *Œuvres complètes*, t. 11, p. 495–498 (Paris, Gide, 1859. Q113.A75, v. 11).

1842

Leuschner, Armin O. Note on the predictions regarding the transit of Halley's Comet, 1910 May 18. Astronomical journal, v. 26, Aug. 29, 1910: 135–136. QB1.A3, v. 26

"The purpose of this note is briefly to set forth the manner in which these predictions were derived and to record them in a more complete and revised form."

1843

Levasseur-Regourd, Anny-Chantal M., *and others*. The Halley Optical Probe Experiment. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP-169) p. 121–126. illus.

NASA accession no. N82-14121.

References (13): p. 126.

1844

Levasseur-Regourd, Anny-Chantal M. Missions spatiales vers les comètes. L'Astronomie, v. 95, mai 1981: 243–253. illus. DN-Ob

References (17): p. 253.

1845

Levin, Boris I͡U. Kometa Gallei͡a—ri͡adovoĭ i unikal′nyĭ ob′ekt solnechnoĭ sistemy. Zemli͡a i vselennai͡a, sent./okt. 1982: 38–46. illus. (part col.), port.

QB1.Z47, 1982

1846

Levins, D., D. O'Sullivan, *and* P. Lo Galbo. Baseline power system design for the Giotto spacecraft. *In* IEEE Power Electronics Specialists Conference, *13th, Cambridge, Mass., 1982.* PESC '82 record. [New York, Institute of Electrical and Electronics Engineers, 1982] p. 354–360. illus.

TL1100.P68, 1982

References (2): p. 357.

Highlights features of the system design "together with design constraints imposed by the mission profile."

1847

Ley, Willy. Dr. Edmond Halley and the "year of the comet." *In his* Watchers of the skies; an informal history of astronomy from Babylon to the space age. New York, Viking Press [1969] (A Viking compass book) p. 135–162.

QB15.L4 1969

1848

Ley, Willy. Halley's Comet. *In his* Visitors from afar: the comets. New York, McGraw-Hill Book Co. [1969] p. 45–52. illus. QB721.L43

See index for additional references.

1848a

Li, Kuang-yü. Halley hui hsing k'uei tao ti yen pien. *In* Chung-kuo k'o hsüeh yüan. *Tzu-chin-shan t'ien wen t'ai.* T'ai k'an, ti 1 chüan, 1982 nien 6 yüeh: 29–45. illus.

DN-Ob

References (11): p. 44–45.

English abstract (p. 45) is entitled "The Evolution of the Orbit of Halley's Comet."

1849

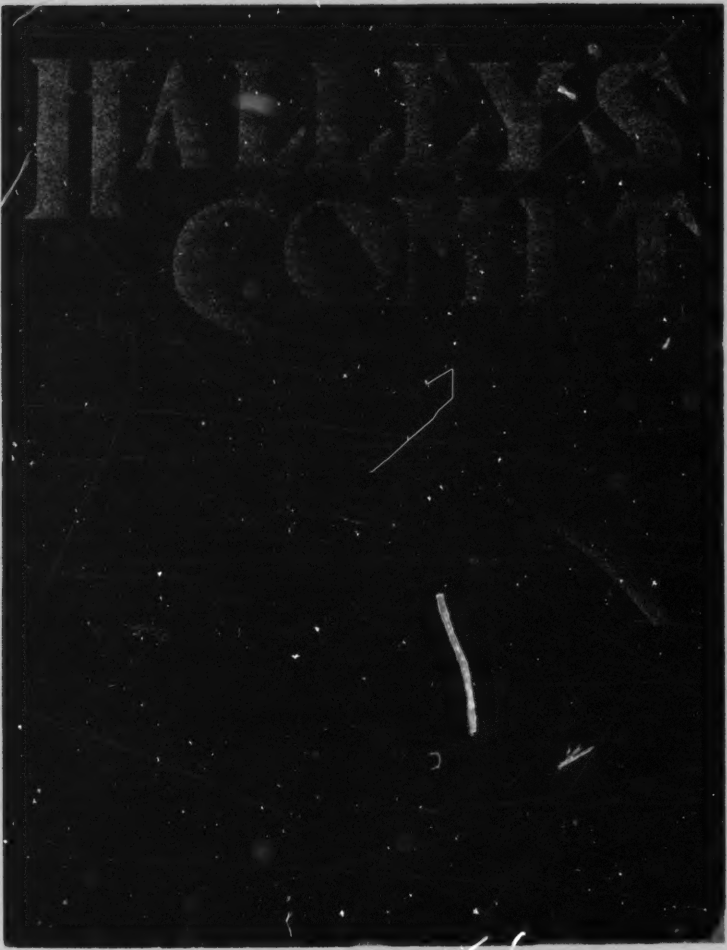
Limb, Claudius, *and* T. Nanty. Observations des variomètres magnétiques de l'observatoire de Fourvière, à Lyon, pendant la nuit du 18 au 19 mai. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 150, 23 mai 1910: 1373–1374. Q46.A14, v. 150

1850

Lincoln, Harry J. Halley's Comet. Rag. Williamsport, Pa., Vandersloot Music Pub. Co. [1910] 5 p. M31.L

For piano.

Cover design (in color) by W. J. Dittmar.


HALLEY'S
COMET

Sheet music cover design, 1910, by W. J. Dittmar, for *Halley's Comet Rag*, by Harry J. Lincoln.

1851
Lincoln, Victoria. Grandmother and the comet. New Yorker, v. 17, Oct. 25, 1941: 22–24. AP2.N6763, v. 17

Short story of the night when the earth passed through the comet's tail. Reprinted in her *Grandmother and the Comet, an Insubstantial Pageant*, p. 190–198 (New York, Farrar & Rinehart [1944] PS3523.I49G7).

1852
Ling, Charles J. Observations of Halley's Comet, made at Newton Observatory, Allegheny College, Meadville, Pa. Astronomical journal, v. 26, Oct. 28, 1910: 161. QB1.A3, v. 26

Observations made Jan. 8–June 7.

1853
Linke, Felix. [Der Halleysche Komet] Natur, 1. Jahrg., 20. Feb., 20. März, 15. Mai, 12. Juni 1910: 180, 210–212, 279–280, 311–312. illus.

News notes in his "Astronomische Rundschau" column.

1854
Linke, Felix. Der Halleysche Komet. Die neue Welt, Nr. 46, 1909: 368; Nr. 16, 1910: 128. illus. AP30.N54, 1909–10

The first article is accompanied by half a dozen illustrations on p. 364–365, while a diagram showing the path of the comet during the period Mar. 1–May 30 appears on p. 124 of the 1910 volume.

1855
Linke, Franz, *and* Julius Ott. Geophysikalische Beobachtungen auf dem Feldberg i.T. gelegentlich des Vorüberganges des Halleyschen Kometen. *In* Physikalischer Verein, *Frankfurt am Main*. Jahresbericht. 1909/10. Frankfurt am Main, C. Naumann's Druckerei, 1911. p. 98–126. illus. (part fold.) Micro 02848

1856
Linke, Franz. Geophysikalische Vorgänge beim Durchgang der Erde durch einen Kometenschweif. *In* Physikalischer Verein, *Frankfurt am Main*. Jahresbericht. 1909/10. Frankfurt am Main, C. Naumann's Druckerei, 1911. p. 57–59. Micro 02848

Summary of a lecture given May 7, 1910.

1857
Linke, Franz. Meteorologische Beobachtungen beim Kometendurchgang. Meteorologische Zeitschrift, Bd. 27, Juni 1910: 262–263. QC851.M3, v. 27

1858
Linke, Franz. Die vorläufigen geophysikalischen Ergebnisse der Beobachtungen beim Kometendurchgang vom 18. bis 19. Mai in Frankfurt a.M. *In* Physikalischer Verein, *Frankfurt am Main*. Jahresbericht. 1909/10. Frankfurt am Main, C. Naumann's Druckerei, 1911. p. 59–60. Micro 02848

Summary of a lecture given July 2, 1910.

1859
Linscott, John. [Halley's Comet] English mechanic and world of science, v. 91, June 3, 1910: 400. T1.E5, v. 91

Letter to the editor reporting an observation made May 26 at Ramsgate. A question raised by the writer about the direction of the comet's tail on May 18 is answered by Col. Harry J. Watson in the June 10 issue (p. 424).

1860
Lipman, Jerry. Halley Fund. Delta Vee update, v. 1, autumn 1981: 4, 13.

Extracts from a letter to Representative Bill Nelson of Florida, arguing at some length in favor of a U.S. mission to Halley's Comet.

1861
Lips, Friedrich. Was die Welt vormahls verschmähet,/Wird nun wiederumb erhöhet,/Öffters mussen die Cometen/Sich erweisen als Propheten. Jndeme GOttes hohem Befehl nach, abermals im August-Monath, im Jahr nach Christi heiliger Geburth 1682. ein Comet-Stern hervor geblicket, hat von demselben seine Bemerckungen kürtzlich eröffnen wollen Friderich Lipss. Rotenburg ob der Tauber, Bey N. von Millenau, 1682. [7] p. MH

1862
Lisenbee, Will. The comet and moon. Chicago ledger, v. 38, May 21, 1910: 3. AP2.C514, v. 38

Poem.

1863
Lisenbee, Will. In the comet's track; or, Strange adventures in space. Chicago ledger, v. 38, Apr. 30, 1910: 1–3; May 7: 1–3; May 14: 5–7; May 21: 5–7; May 28: 5–6, 15; June 4: 4. illus. (part col.) AP2.C514, v. 38

Illustrations by William Molt and André Bowles.

Passengers in a spacecraft temporarily out of control travel alongside and study Halley's Comet for a while, en route to the moon. This episode occupies 2 of the 28 chapters.

1864
L'Isle, Joseph N. de. Lettre de M. De L'Isle, astronome-géographe de la Marine, de l'Académie royale des sciences, &c. A Messieurs les auteurs du Journal des sçavans, contenant la découverte du retour de la comète de 1682, dont la carte a été présentée au roi le 5 avril 1759 avec la description. Journal des sçavans, juin 1759: 356–364.

Letter dated 18 avril 1759.

1865
L'Isle, Joseph N. de. Lettre de M. de l'Isle, de l'Académie royale des sciences, &c. A l'auteur du Mercure, sur le retour de la comète de 1682, contenant les premières observations qui en ont été faites à Paris, avec l'explication de la méthode dont on s'est servi pour la découvrir. Lue dans l'Académie des sciences le 5 & 9 mai 1759. Mercure de France, juil. 1759, 1. v.: 146–175. AP20.M48, 1759 Rare Bk. Coll.

Charles Messier, the most famous of comet hunters, first saw Halley's Comet on the night of Jan. 21, 1759. On a celestial chart accompanying his report in the 1759 *Mémoires* of the Académie royale des sciences, this and his subsequent observations through Apr. 16 are indicated by small circles on a solid line identified as "Route de la Comète observée," passing through the constellations Pisces, Aquarius, and Capricornus. The comet's tail can be seen extending to the right of the circles that mark the observations of Mar. 31 and Apr. 1. Dotted lines show the calculated elliptical and parabolic paths of the comet from Jan. 7 through Apr. 19.

The artist, John Ingram, described in the *Dictionary of National Biography* as "an engraver of great merit," was born in London. After embarking on his career there, he moved to Paris, where he remained for the rest of his life. He was in demand as a book illustrator, and he contributed many plates to the publications of the Académie royale des sciences.

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1866

L'Isle, Joseph N. de. Recherche du lieu du ciel, où la comète prédite, par M. Halley, doit commencer à paroître; avec une table des longitudes & latitudes des points du ciel, où l'on doit la chercher pendant une année entière, à commencer du premier novembre 1757. Paris, 1757.

"Brochure in-4°" cited among the "nouvelles littéraires" in *Mémoires pour l'histoire des sciences et beaux-arts*, nov. 1757, p. 2869 (AS161.T8, 1757).

1867

L'Isle, Joseph N. de. Seconde lettre de M. de Lisle, de l'Académie royale des sciences, à messieurs les auteurs du Journal des sçavans, contentant l'histoire des dernières observations de la présente comète, avec la récapitulation des trois différentes apparitions de cette comète sur l'horizon de Paris. Journal des sçavans, aoust 1759: 523–529.

Letter dated 16 juin 1759.

1868

L'Isle, Joseph N. de. Sur la comète de 1759, ou le retour de celle de 1682. *In* Académie des sciences, *Paris*. Mémoires de mathématique et de physique, tirés des registres de l'Académie royale des sciences, de l'année M. DCCLX. [A Paris, De l'Impr. royale, M. DCCLXVI] p. 380–465. fold. plates. Q46.A13, 1760

Most of this lengthy contribution is devoted to Charles Messier's detailed "Histoire & observations du retour de la comète de 1682" (p. 380–433). This is followed by reports of observations by Klinkenberg at The Hague (p. 433–439); Lulofs at Leiden (p. 440–442); de Ratte at Montpellier (p. 442); Father Morand at Avignon (p. 443); Father Hell at Vienna (p. 444); data from observations made at Dresden (p. 444–446), Rome (p. 446), and Cadiz (p. 446–447); and reports from Father Chevalier at Lisbon (p. 447–457), Father Cœurdoux at Pondicherry (p. 458–460), and de La Nux at Réunion (p. 460–463).

The three plates are celestial charts (fully described by Warner, p. 176, 178). The first is entitled "Hémisphère boreal. Ou sont tracées deux ovales pour la recherche de la comète de 1682"; the second, "Carte de la route apparente de la célèbre comète de 1759"; and the third shows the comet's observed path during May and June.

A somewhat abridged English translation by Matthew Maty of Messier's report, "A Memoir, Containing the History of the Return of the Famous Comet of 1682, With Observations of the Same, Made at Paris, at the Marine Observatory, in January, February, March, April, May, and the Beginning of June, 1759," appears in the Royal Society's *Philosophical Transactions*, v. 55, 1765, p. 294–325 (London, Printed for L. Davis and C. Reymers, Printers to the Royal Society, M.DCC.LXVI. Q41.L8, v. 55 Rare Bk. Coll.).

1869

Littrow, Joseph J., *Edler* von. Halley's Komet. *In his* Die Wunder des Himmels; oder, Gemeinfassliche Darstellung des Weltsystems. 2., verb. Aufl. in einem Bande. Stuttgart, Hoffmann'sche Verlags-Buchhandlung, 1837. p. 419–428. QB43.L5 1837

1870
Littrow, Joseph J., *Edler* von. Ueber Kometen. Mit einem Anhange über den im Jahre 1835 erscheinenden Halley'schen Kometen von Karl Ludwig Littrow. Neue Aufl. Wien, C. Gerold, 1835. xvi, 223 p. fold. plates.
QB7[illegible]1.L78

"Der Halley'sche Komet im Jahre 1835. Von Karl Ludwig Littrow": p. [179]–223. Includes an ephemeris for the period Jan. 1, 1835 - Apr. 12, 1836, and a German translation of Robert Hooke's 1682 observations (his sketches are reproduced on the second plate), from *The Posthumous Works* (item 1466).

1871
Littrow, Karl L., *Edler* von. Beyträge zu einer Monographie des Halley'schen Cometen. Bey Gelegenheit seiner Erscheinung im Jahre 1835 gemeinfasslich dargestellt. Wien, Bey H. F. Müller, 1834. 72 p. fold. plates.
QB723.H2L57 Rare Bk. Coll.

Bibliography: p. [71]–72.

Presentation copy with author's signature.

A French version by A. Darlu, entitled *De la comète de Halley; extraits de la notice historique de M. Littrow* (A Meaux, Chez J.-L. Chanson, 1835. 60 p.), is held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 167.

1872
Littrow, Karl L., *Edler* von. Schreiben des Herrn Directors v. Littrow an den Herausgeber. Astronomische Nachrichten, 25. Bd., Beilage zu Nr. 599, 20. Mai 1847: columns 373–376. QB1.A77, v. 25

Comparison stars for various comets, for the meridian of the Vienna observatory.

"Zum Halley'schen Cometen": column 374.

1873
Littrow, Karl L., *Edler* von. Schreiben des Herrn Dr. Littrow, Assistenten an der Kaiserl. Sternwarte in Wien an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 307–308; 13. Bd., Nr. 289, 17. Oct.: columns 1–2. QB1.A77, v. 12–13

The earlier letter reports sighting the comet for the first time early on Aug. 22, and the second provides more precise figures for three observations in August.

1874
Littrow, Karl L., *Edler* von. Sur l'intensité lumineuse de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 2, 15 fév. 1836: 155. Q46.A14, v. 2

Extract from a letter to A. Darlu.

1875
La Llegada del cometa. El Diablito rojo, 2. epoca, año 3, 30 de mayo de 1910: [1] illus.

The illustration, by Posada, accompanies a poem on the comet's appearance and significance.

Reproduced in *Posada's Mexico*, p. 26 (Washington, Library of Congress in cooperation with the Amon Carter Museum of Western Art, Fort Worth, Texas, 1979. NE546.P6A4 1979).

1876
Lockheed study shows probe to Halley's Comet is feasible. Aerospace technology, v. 21, Aug. 28, 1967: 56. illus.

1877
Lockwood, G. R. Sky map of Halley's Comet. Philadelphia, Williams, Brown & Earle, 1910. broadside (2 p.)

The verso includes an explanation of the map, notes on comets and the history of Halley's Comet, tables of the solar system and 11 comets, a diagram showing relative sizes of the sun, planets, and Halley's Comet, and two stanzas from Oliver Wendell Holmes' poem, "The Comet."

1878
Lockwood, W. G. [Halley's Comet] English mechanic and world of science, v. 91, June 17, 1910: 450. illus. T1.E5, v. 91

Letter to the editor accompanying a sketch of the comet as seen at Llanberis on May 26.

1879
Löbel, Johann G. F. Der Halley'sche Comet in seiner vierundzwanzigsten Wiederkunft seit dem Jahr sechzehn nach Chr. Geb. im Jahr 1835. Nürnberg, J. P. Raw'sche Buchhandlung, 1835. 64 p. ICJ

1880
Löwis of Menar, August A. von. Ein russischer Schutzbrief wider den Kometen Halley. Zeitschrift des Vereins für Volkskunde, 21. Jahrg., Heft 3, 1911: 292–293. GR1.Z4, v. 21

In the town of Samara a person in monkish garb was seen selling leaflets bearing a handwritten spell which would protect the purchaser from the evil influence of the comet. A translation of the text of the spell is supplied.

Based on a report published in *Etnograficheskoe obozrîenîe*, god. 22, no. 1/2, 1910, p. 230.

1881
Loewy, Maurice, *and* Leopold Schulhof. Tableau des comètes apparues de 1825 à 1888: comètes de 1825 à 1835 et de 1888. *In* France. *Bureau des longitudes*. Annuaire pour l'an 1890. Paris, Gauthier-Villars [1890?] p. 272–295. QB9.F8, 1890

"1835 c (1835 III). Comète de Halley": p. 286–290.

1882
Long, Roger. The comet of 1759. *In his* Astronomy, in five books. v. 2. Cambridge, 1785. p. 560–562. QB42.L84, v. 2 Rare Bk. Coll.

1883
Longbottom, Frederick W. [Halley's Comet] English mechanic and world of science, v. 90, Nov. 26, 1909: 401. T1.E5, v. 90

Letter to the editor reporting photographs taken Nov. 8 and 21.

1884
Longomontanus, Christian S. De designatione cursus cometae anni 1607, ex propriis observationibus; deque parallaxibus ejusdem exilibus, unde hunc intra coelestem regionem longe supra lunam fuisse concludimus. *In his* Astronomia danica ... Cum appendice de ascititiis caeli phaenomenis, nempe, stellis novis et cometis. Nunc denuo ab authore locis nonnullis emendata & aucta. Amsterdami, Apud I. & C. Blaev, Anno M. DC. XXXX. p. 25–31 (2d group) Q155.S395 1677 Rare Bk. Coll.

Following a similar chapter on the comet of 1618, the author discusses the significance of both as omens of disorder in human affairs. DLC also holds a 1622 edition (QB41.L74 1622 Rare Bk. Coll.).

1885
Looking for Halley's Comet. Sky & telescope, v. 61, June 1981: 500–501. illus. QB1.S536, v. 61

Chiefly about Yeomans' *Comet Halley Handbook*.

1886
Loomis, Elias. Ephemeris of Halley's Comet. Army and Navy chronicle, v. 1, Oct. 8, 1835: 325. U1.A6, v. 1

"... computed for a perihelion passage of November 17·1, Paris mean time from midnight," the ephemeris covers Oct. 1–31.

1887
Loomis, Elias. Note respecting Halley's Comet. American journal of science and arts, 2d ser., v. 5, May 1848: 370–372. Q1.A5, s. 2, v. 5

1888
Loomis, Elias. Observations on the Comet of Halley, made at Yale College. American journal of science and arts, v. 30, no. 2, 1836: 209–221. Q1.A5, v. 30

1889
Lovell, Alfred Charles Bernard. Meteor astronomy. Oxford, At the Clarendon Press, 1954. xiv, 463 p. illus., plates. (The International series of monographs on physics) QB741.L6

Bibliographic footnotes.
"The η-Aquarid shower": p. 263–269.
"The Orionid shower": p. [288]–296.

1890
Lowell, Percival. The coming comet. Youth's companion, v. 84, Feb. 24, 1910: 99–100. illus., port. AP201.Y8, v. 84

1891
Lowell, Percival. Halley's Comet. Windsor magazine, v. 31, Mar. 1910: 531–534. illus. AP4.W7, v. 31

A diagram shows the path of the comet in the heavens for the period Oct. 2, 1909–May 21, 1910.

1892
Lowell, Percival. The hood of a comet's head. Astronomical journal, v. 26, Aug. 29, 1910: 131–134. illus. QB1.A3, v. 26

Mathematically derived curves are compared with actual observations of Halley's Comet.

1893

Lowell, Percival. Motion of molecules in the tail of Halley's Comet. [Flagstaff, Ariz.? 1910] 256–258 p. (Flagstaff, Ariz. Lowell Observatory. Bulletin, no. 48) QB4.F57, v. 1

Summarized in *Nature*, v. 85, Nov. 3, 1910, p. 21–22 (Q1.N2, v. 85). A summary in German, "Die Bewegung der Moleküle im Schweif des Halleyschen Kometen," appears in *Sirius*, 43. Bd., Nov. 1910, p. 260, and a brief report, in *Scientific American*, v. 103, Dec. 3, 1910, p. 439 (T1.S5, v. 103).

1894

Lowell, Percival. Spectroscopic proof of the repulsion by the sun of gaseous molecules in the tail of Halley's Comet. *In* American Philosophical Society. Proceedings, v. 50, May/June 1911: 254–260. Q11.P5, v. 50

1895

Lowell, Percival. Velocities of particles in the tail of Halley's Comet. Astronomical journal, v. 26, Sept. 13, 1910: 141–143. QB1.A3, v. 26

A shortened version was published in *Astronomische Nachrichten*, Bd. 186, Nr. 4441, 16. Sept. 1910, columns 11–14 (QB1.A77, v. 186).

1896

Lubbock, *Sir* John W., *3d Bart.* Note on the orbit of the Comet of Halley. Addition to the Note by Mr. Lubbock upon Halley's Comet. *In* Royal Astronomical Society. Memoirs. v. 4, pt. 2. London, Priestley and Weale, 1831. p. [509]–516. QB1.R5, v. 4

Papers read Jan. 14, 1831. A brief report appears in the Society's *Monthly Notices*, v. 2, Jan. 1831, p. 5–6.

1897

Lubbock, *Sir* John W., *3d Bart.* On the determination of the orbit of a comet. *In* Royal Astronomical Society. Memoirs, v. 4, pt. 1. London, Priestley and Weale, 1830. p. [39]–57. fold. illus. QB1.R5, v. 4

Paper read Jan. 9, 1829. A brief report appears in the Society's *Monthly Notices*, v. 1, Jan. 1829, p. 95–96 (QB1.R7, v. 1). As an example, the author calculates the orbit of Halley's Comet. A list of errata appears in v. 4, pt. 2, of the *Memoirs*, on p. 516.

—— ——— Supplement. *In* Royal Astronomical Society. Memoirs, v. 4, pt. 1. London, Priestley and Weale, 1830. p. [179]–184. QB1.R5, v. 4

Paper read Nov. 13, 1829. A brief report appears in the *Monthly Notices*, v. 1, Nov. 1829, p. 141.

1898

Lubbock, *Sir* John W., *3d Bart.* On the elements of the orbit of the Comet of Halley in 1759. *In* Royal Society of London. Proceedings, v. 3, no. 20, 1835: 332. Q41.L7, v. 3

Abstract of a paper given May 7, 1835.

1899
Lubieniecki, Stanislaw. Historia vniversalis omnium cometarum, a diluvio usque ad praesentem annum vulgaris epochae a Christo nato 1665. decurrentem, qui numero 415. enarrantur; cum annotationibvs. Lugduni Batavorum, Ex officina P. vander Meersche. Anno 1681. 464 p. plates (part fold.), port. (*His* Theatrum cometicum, pars posterior)
CBPac; CtY; DFo; ICU; NN; NNC

The following possible and confirmed returns of Halley's Comet are among those recorded (though the dates vary in some cases from those now accepted):

XXXIII. Anno mundi 3882. ante Christum natum 87: p. 23.
XL. Anno ante Christum natum 13: p. 27–28.
LXXXI. Anno Christi 217: p. 59–61.
CXII. Anno Christi 450: p. 86–87.
CLVII. & CLVIII. Anno Christi 761: p. 126–127.
CLXXI. CLXXII. CLXXIII. Anno Christi 847 [i.e. 837]: p. 140–144.
CLXXXIV. & CLXXXV. Anno Christi 910: p. 157–160.
CCXII. Anno Christi 1066: p. 187–188.
CCXXXIX. Anno Christi 1145: p. 215–217.
CCLII. & CCLIII. Anno Christi 1222: p. 232–234.
CCLXXII. Anno Christi 1301: p. 249–250.
CCCXXIII. & CCCXXIV. Anno Christi 1456: p. 292–294.
CCCLXIIX. Annus hic 1531: p. 333–336.
CCCCVII. Anno Christi 1607: p. 407–413.

References to sources accompany each entry. The addenda (p. 441–464) include material supplementing the entries cited above.

Among the engravings (by Bastiaen Stopendael) in the Folger Library's copy: facing p. 104, a small illustration, fifth from the top on the left, shows the comet of 837; facing p. 140, displays the path of the comet of 837 during April; facing p. 213, at the bottom, shows the comet of 1456; facing p. 333, includes the positions of the 1531 comet as noted by Apian and Fracastoro; and facing p. 413, includes the positions of the 1607 comet as recorded by Kepler and Longomontanus.

1900
Luchini, Roberto. Fotografie della cometa di Halley eseguite alla specola fotografica Cerulli in Teramo. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 4, sett. 1910: 414–420. plate.
QB1.S57, v. 4

The plate reproduces photographs taken June 1 and 2.

1901
Lüst, Rhea. Cometary probes. Space science reviews, v. 10, Nov. 1969: 217–229. illus.
QB1.S77, v. 10

References (30): p. 228–229.

"It is emphasized that a mission to Comet Halley in 1986 would be of special value."

1902
Lüst, Rhea, *and* Horst U. Keller. Ein Flug zu den Kometen Halley und Tempel 2: Gemeinschaftsprojekt von Europäern und Amerikanern. MPG Spiegel, Nr. 3, 1980: 30–32. illus.
DLC

1903
Lüst, Rhea. Why should we observe Halley's Comet? *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 7–18. illus.
References (18): p. 17
Discussion: p. 18.

1904
Lüthi, Werner. ESA plant Vorbeiflug am Halleyschen Komet. Orion, 39. Jahrg., Apr. 1981: 47. QB1.O64, v. 39

1905
Luizet, Michel L., *and* Joseph N. Guillaume. Sur les apparences de la comète de Halley. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 150, 6 juin 1910: 1492–1494. Q46.A14, v. 150

The authors describe the comet as it was seen, presumably at Lyon, on Mar. 1, 3, and 8, Apr. 23, 27, and 30, and May 1, 2, 4, 13, 14, 15, 21, 24, and 26.

1906
Lulofs, Johannes. Waarneemingen van de staart-sterre, welke zig vertoond heeft in dit jaar 1759. *In* Hollandsche maatschappij der wetenschappen, *Haarlem.* Verhandelingen. 5. deel. Te Haarlem, By J. Bosch, 1760. p. 225–236. Q57.H2, v. 5

1907
Lummel, Hendrik J. van. Komeet van Halley. *In* Natuurkundig tijdschrift voor Nederlandsch-Indië. Bijblad, nr. 1, 1910: 7–23.

1908
Luther, Wilhelm. Ringmikrometerbeobachtungen von Kometen am Refraktor (Objektivöffnung 18.6 cm) der Düsseldorfer Sternwarte. Astronomische Nachrichten, Bd. 187, Nr. 4481, 6. März 1911: columns 341–346. QB1.A77, v. 187

Includes observations of Halley's Comet made Dec. 16, 1909–May 31, 1910.

1909
Lux, Christophorus. Observatio Pragensis alterius cometae A. 1682. *In* Stansel, Valentinus. Legatus uranicus ex orbe novo in veterem, hoc est: Observationes Americanae cometarum factae, conscriptae ac in Europam missae a R. P. Valentino Stansel ... et à Mathesi Pragensi. Pragae, Typis Universitatis Carolo Ferdinan: in Collegio Societatis Jesu, ad S. Clementem, Anno M.DC.LXXXIII. p. clxvii.

Stansel's work is held by the British Library under shelfmark 532. e. 8. Observations made Aug. 27–Sept. 12.

1910
Lynch, James K. Halley's Comet. Georgetown College journal, v. 38, Apr. 1910: 268–272. illus. LH1.G5J7, v. 38

1911
Lynch, James K. Halley's Comet—a model of its orbit. Scientific American, v. 102, Apr. 30, 1910: 359. fold. illus. T1.S5, v. 102

Directions for constructing a model by using diagrams printed in a looseleaf supplement published with this issue.

1912
Lynn, William T. The approaching return of Halley's Comet. Observatory, v. 29, Nov. 1906: 432. DN-Ob

1913
Lynn, William T. Conjectured meteors of Halley's Comet. Student and intellectual observer, v. 3, May 1869: 281. Q1.S9, v. 3

On Falb's suggestion that meteors left behind by Halley's Comet "may possibly be seen to pass over the Sun's disc about the 15th of May."

1914
Lynn, William T. The first Welsh astronomer. Observatory, v. 17, Sept. 1894: 302–303. QB1.O2, v. 17

A letter, chiefly about William Lower's observations of Halley's Comet in 1607.

1915
Lynn, William T. Halley's Comet. Notes and queries, 8th ser., v. 6, Nov. 10, 1894: 364–365. AG305.N7, s. 8, v. 6

Comments on the "very common mistake made by writers not familiar with astronomical history" of confusing "the great comet of 1680 with the smaller but more famous one of 1682," and referring to the former as Halley's Comet, instead of the latter.

1916
Lynn, William T. Halley's Comet. Observatory, v. 31, Apr. 1908: 179. QB1.O2, v. 31

A note concluding, from a statement by Flamsteed, that while Halley saw in 1682 the comet that was later to bear his name, he could not observe it.

1917
Lynn, William T. Halley's Comet. Observatory, v. 31, June 1908: 254. QB1.O2, v. 31

A letter noting that, although the assertion is sometimes made, it is not true that Halley *discovered* Halley's Comet.

1918
Lynn, William T. Halley's Comet. Observatory, v. 33, Apr. 1910: 175–176. QB1.O2, v. 33

Calls attention, in a letter to the editor, to instances in which the comets of 1680 (Newton's) and 1682 (Halley's) were confused by some writers.

Differs from the earlier *Notes and Queries* contribution.

1919
Lynn, William T. [Halley's Comet] *In his* Remarkable comets; a brief survey of the most interesting facts in the history of cometary astronomy. 2d ed. London, E. Stanford, 1894. p. 11–13. DN-Ob

1920
Lynn, William T. Halley's Comet. (With an addendum on periodical comets.) *In* The British almanac of the Society for the Diffusion of Useful Knowledge, for the year of Our Lord 1883. London, Company of Stationers [1882?] Companion to the almanac, p. [5]–15. AY754.B6, 1883

1921
Lynn, William T. Halley's Comet and "Zadkiel." *In* British Astronomical Association, *London*. Journal, v. 16, Apr. 1906: 238–239. QB1.B75, v. 16

A paper read at a meeting of the Association on Mar. 28, 1906; comments made by members appear on p. 225 of the same issue. "Zadkiel" was Richard James Morrison, who served as an officer in the Royal Navy and later became an astrologer.

1922
Lynn, William T. Halley's Comet at its appearance in 1759. Observatory, v. 9, Aug. 1886: 284–286. QB1.O2, v. 9

A letter about Palitzsch's discovery and other observations.

1923
Lynn, William T. Halley's Comet in 1835. Observatory, v. 32, Apr. 1909: 175–177. QB1.O2, v. 32

Letter to the editor.

1924
Lynn, William T. Madame Lepaute. Observatory, v. 34, Feb. 1911: 87–88. QB1.O2, v. 34

On the career of the mathematician who assisted Clairaut and Lalande in calculating the orbit and the 1759 perihelion date of Halley's Comet.

1925
Lynn, William T. Perihelion distance of Halley's Comet. Observatory, v. 29, Jan. 1906: 67–68. QB1.O2, v. 29

Letter to the editor.

1926
Lynn, William T. Periodical comets due in 1910. Observatory, v. 33, Jan. 1910: 55–56. QB1.O2, v. 33

Briefly discusses comets Halley, Tempel 2, and d'Arrest.

1927
Lynn, William T. Prediction and non-prediction. Observatory, v. 14, Dec. 1891: 420–421. QB1.O2, v. 14

Letter to the editor discussing the basis on which Halley predicted the return of the comet of 1682.

1928
Lynn, William T. Sir William Lower's observations of Halley's Comet in 1607. Observatory, v. 14, Oct. 1891: 347–348. QB1.O2, v. 14
Letter to the editor.

1929
Lynn, William T. Three remarkable comets. *In* British Astronomical Association, *London*. Journal, v. 17, Apr. 1907: 276–279. QB1.B75, v. 17
The comets are Encke's, Newton's, and Halley's.

1930
Lyon, Jeff. Will there be space in budget to fly right with Halley's Comet? Chicago tribune, Mar. 19, 1981, section 2: 1, 3. illus. N&CPR

1931
Lyttleton, Raymond A. Comets. Observatory, v. 90, Oct. 1970: 178–186. QB1.O2, v. 90

The Halley Lecture for 1970, delivered in Oxford on May 5. In a general treatment of the subject, the author first describes Halley's contribution to knowledge about comets and concludes with a discussion of plans to send a space probe on a rendezvous mission in 1986.

1932
Lyttleton, Raymond A. Effect of solar radiation on a swarm of meteoric particles. Moon and the planets, v. 23, Aug. 1980: 27–39. illus. QB581.M65, v. 23

References (6): p. 39.
"The theory of the Poynting-Robertson effect is applied to the motion of meteors relative to a parent-comet describing an undisturbed elliptic orbit." Calculations are applied to particles emitted by three comets—Encke, Halley, and Tempel-Tuttle.

1933
Lyttleton, Raymond A. On the tail of Halley's Comet. Guardian (Manchester), Oct. 30, 1980: 11. illus. N&CPR
"There are plans afoot to launch a spacecraft for a closer look at Halley's Comet in 1986. If this chance is not taken there won't be another until around 2060. Professor Raymond Lyttleton FRS explains why it could be one of the century's most worthwhile space projects."

1934
Maassberg, H., *and* U. Isensee. Symmetric model of spacecraft charging and plasma emission effects. *In* Active experiments in space plasmas. Proceedings of Symposium 9 of the COSPAR twenty-third plenary meeting held in Budapest, Hungary, 2–14 June 1980. Edited by C. T. Russell and M. J. Rycroft. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1981] (Advances in space research, v. 1, no. 2) p. 167–170. illus. QC809.P5A28 1981
References (6): p. 170.
"The spacecraft charging and the potentials in its surroundings are investigated for the following plasma and emission conditions: (1) in the ionosphere in the case of very negative surface potentials, (2) in the solar

wind with regard to the HELIOS mission and (3) in the near vicinity of the comet Halley, where a very strong plasma emission due to the impact of neutral gases onto the surface must be regarded."

1935
Maassberg, H., U. Isensee, *and* G.-H. Voigt. Symmetric model of spacecraft charging and plasma emission effects. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP–155) p. 47–65. illus.

NASA accession no. N81-34117.

References (12): p. 64–65.

"In the vicinity of the comet Halley, the impact of cometary dust particles and neutral gas onto the probe produces a very strong charged particle emission coming from the front shield of the probe. The electrostatic charging of the Halley probe and the interactions with the plasma in the near surroundings are investigated by making use of a spherically symmetric model."

1936
McAleer, Neil. A cosmic ticking. *In his* The cosmic mind-boggling book. [New York] Warner Books [1982] p. 120–123. illus.
QB44.2.M4 1982

A brief history of Halley's Comet. The cover of the volume reproduces the Lowell Observatory photograph of the comet taken May 19, 1910, with color and computer enhancement by the picture processing lab of Kitt Peak National Observatory.

1937
Macalister, Robert A. S. Halley's and other comets in the Irish annals. *In* Royal Society of Antiquaries of Ireland, *Dublin*. Journal, v. 40, Mar. 1910: 64–66.
DA900.R88, v. 40

Notes that the *Annals of Ulster* record what may have been the A.D. 912 return of Halley's Comet.

1938
McCanse, Cleo. Halley's long looked for comet. Song. Washington, D.C., H. Kirkus Dugdale Co. [1910] 3 p.
Mus

For voice and piano.

Cover design includes stylized drawing of a comet.

1939
McCutcheon, John T. [Comet cartoons] Chicago daily tribune, v. 69, May 17, 1910: 1; May 18: 1; May 19: 1. illus.
N&CPR

Contents: Lecture on the comet.—"The comet is coming, hooray! hooray!"—The morning after—all present or accounted for.

1940
McDonnell, James A. M., *and others*. A dust impact detection system (DIDSY) for the Giotto Halley Mission. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 61–75. illus.

NASA accession no. N82–14116.
References (39): p. 74–75.

1941
McDonnell, James A. M. The ESA Giotto Comet Halley Mission. *In* Yearbook of astronomy. Edited by Patrick Moore. 1983. New York, W. W. Norton [1983] p. 165–198. illus. QB1.Y4, 1983
Bibliography: p. 197–198.
Includes information on the Soviet and Japanese missions.

1942
McDonnell, James A. M. Marginal hypervelocity penetration studies of single and double foil structures; experimental measurements and the possibilities of a 2 MV microparticle accelerator for comet meteoroid probe design explored. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 93–97. illus.
NASA accession no. N80–22213.
References (8): p. 97.

1943
MacDonnell, William J. Halley's Comet in a small telescope. *In* British Astronomical Association, *London.* Journal, v. 20, Jan. 1910: 200. QB1.B75, v. 20
Read at a meeting of the New South Wales Branch, Dec. 17, 1909.

1944
McDougall, Walter H. The comet is now visible at Washington. Literary digest, v. 40, Apr. 30, 1910: 858. illus. AP2.L58, v. 40
Cartoon shows Taft, in pajamas, looking out the window at the comet, the head of which looks like Teddy Roosevelt's glasses and teeth. Copied from the Philadelphia *Telegraph* (date not given).
Also reprinted in the *Canadian Magazine*, v. 35, June 1910, p. 181 (AP5.C2, v. 35).

1945
McGarry, Terrance. 6-year countdown for Halley's Comet. Chicago tribune, Sept. 28, 1980: 6. illus. N&CPR
Interview with John C. Beckman, manager of planetary programs at the Jet Propulsion Laboratory.

1946
MacGillivray, Donald. The Chinese and the comet. Contemporary review, v. 98, Oct. 1910: 409–412. AP4.C7, v. 98
Concerns tracts and posters distributed in China by the Christian Literature Society and other missionary groups to head off popular unrest and alarm by announcing the forthcoming appearance, and emphasizing the harmlessness, of Halley's Comet. The author was a Presbyterian missionary.

1947
Machado, Antonio A. O. O cometa de Halley. Occidente, v. 33, 20 de abril de 1910: 82–83. illus., port. AP65.O4, v. 33

1948
McHarg, John. [Halley's Comet] English mechanic and world of science, v. 91, May 13, June 17, 1910: 332–333, 452. T1.E5, v. 91

Letters to the editor that include brief reports of observations made at Lisburn on May 7 and on May 25 and June 2.

1949
McIntosh, R. A. Ephemeris of the radiant-point of the Eta Aquarid meteor stream. *In* Royal Astronomical Society. Monthly notices, v. 95, May 1935: 601–605. illus. QB1.R7, v. 95

1950
McIntosh, R. A. The meteor swarm of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 90, Nov. 1929: 157–160. QB1.R7, v. 90

1951
McIntyre, Donald. Comets in old Cape records. With a foreword by C. Graham Botha. Cape Town, Cape Times, 1949. 15 p. facsims.

Reviewed by Joseph Ashbrook in *Popular Astronomy*, v. 57, Oct. 1949, p. 416 (QB1.P8, v. 57); by M. H. T. in the *Journal* of the British Astronomical Association, v. 60, Dec. 1949, p. 38 (QB1.B75, v. 60); and by J. G. Porter in the *Observatory*, v. 70, Apr. 1950, p. 83 (QB1.O2, v. 70).

Ashbrook quotes the following: "... The very last observations of the comet at this apparition (1835) were made by Sir John Herschel from his station at Claremont, Cape, in May 1836. Sir John Herschel's little refractor may thus be said to have said goodbye to Halley's comet in 1836. It may also be said to have welcomed the comet back 73 years later; for it was the guiding telescope to the larger instrument at the Helwan Observatory, near the famous pyramids of Sakkara, with which the comet was first photographed on 1909 Aug. 24 on the occasion of its last return."

1952
McKay, Hugh C. The menace of the comet. Lone hand, v. 6, Apr. 1910: 607–616. illus., port.

Illustrations by Jack Sommers and Lionel Lindsay.

"The famous comet of Edmund Halley, which left an indelible impress on the history of nations, is on the eve of return. The earth comes into collision with portion of the comet on May 19–20 next. Will the event produce some serious world-disaster?"

1953
McKenna-Lawlor, Susan, A. Thompson, Denis O'Sullivan, E. Kirsch, D. B. Melrose, *and* K. P. Wenzel. The detection of energetic cometary and solar particles by the EPONA instrument on the Giotto mission. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 193–201. illus. QB723.H2R4 1983

References (13): p. 200–201.

1954

McKenna-Lawlor, Susan, A. Thompson, Denis O'Sullivan, E. Kirsch, D. B. Melrose, *and* K. P. Wenzel. An energetic particle detector for Giotto and its scientific objectives. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 39–44. illus.

NASA accession no. N82–14113.

References (14): p. 44.

1955

McKenna-Lawlor, Susan, A. Thompson, Denis O'Sullivan, E. Kirsch, D. B. Melrose, *and* K. P. Wenzel. Solar particles, Comet Halley and EPONA. Irish astronomical journal, v. 15, Sept. 1981: 111–112.
QB1.I753, v. 15

Summary of a paper presented at the 1982 meeting of the Royal Astronomical Society in Dublin.

On the Energetic Particle Onset Admonitor, an experiment to be carried by the Giotto mission.

1956

Mackenzie, Robert A. Solar system debris. Dover, British Meteor Society, 1980. 103 p. illus., plates. (Monographs in solar system astronomy, v. 1)
QB740.M2

"2.3. (241) Eta Aquarids and (243) Halleyids": p. 9–11.

"2.8. (716) Orionids": p. 19–20.

These sections provide information on "the structure, orbital evolution, history and possible origins" of the meteor streams associated with Halley's Comet.

"8.7. P/Halley and associated streams": p. 87.

1957

McKready, Kelvin. The comet in the Christmas sky. Ladies' home journal, v. 27, Dec. 1909: 39. illus.
AP2.L135, v. 27

1958

McLaughlin, William I. International Halley Watch. Spaceflight, v. 24, Dec. 1982: 443–444. illus.
TL787.B725, v. 24

Part of a larger article entitled "Space at JPL."

1959

McLaughlin, William I. The natural history of Halley's Comet. *In* British Interplanetary Society. Journal: space chronicle, v. 34, July 1981: 266–280. illus., port.
TL790.A1B7, v. 34

References (51): p. 279–280.

Reviews some characteristics of comets in general: their origin, orbital evolution, and constitution. "Then, focusing on Comet Halley, three episodes in dynamics are discussed: the original work of Edmond Halley, the use of the comet as a gravitational probe in the search for a trans-Plutonian planet and the combination of modern methods with ancient observations in the determination of the comet's orbit. The 1986 apparition is previewed by considering a few of the plans to launch space probes, and what should be the objectives of *in situ* exploration. The physical and cultural views from Earth complete the work." The cover of the issue reproduces a 1910 photograph of the comet.

An illustrated adaptation of some of this material appears under the title "Halley's Comet—Messenger From Space" in *Spaceflight*, v. 23, Aug./Sept. 1981, p. 212–213 (TL787.B725, v. 23), with a correction, headed "Erratum," in the Oct. 1981 issue, p. 256.

1960

Maclear, *Sir* Thomas. Observations of Halley's Comet, made at the Royal Observatory, Cape of Good Hope, in the years 1835 and 1836. *In* Royal Astronomical Society. Memoirs. v. 10. London, J. Weale, 1838. p. 91–155. plates. QB1.R5, v. 10

A paper read Apr. 14, 1837, accompanied by a list of comparison stars and tabulated observations covering the period Oct. 28, 1835–May 5, 1836. Drawings of the comet, reproduced on four double plates, are the work of Charles Piazzi Smyth. A brief report appears in the Society's *Monthly Notices*, v. 4, Apr. 1837, p. 73–74 (QB1.R7, v. 4). See also the brief extract of a letter from Maclear to Francis Beaufort (then a captain) in the *Monthly Notices*, v. 4, Nov. 1836, p. 3.

1961

MacLeish, Rod. Calm your nerves before the celestial belch arrives. Washington star, June 8, 1981: A-8. illus. N&CPR

1962

MacNeal, Richard H., *and* John M. Hedgepeth. Helicopters for interplanetary space flight. Presented at the 34th annual national forum of the American Helicopter Society, Washington, D.C., May 1978. Washington, D.C., American Helicopter Society, 1978. 11 p. illus. (Preprint no. 78–11)

AIAA accession no. A79–18137.

References (22): p. 11.

Chiefly about the heliogyro considered for use in the Halley's Comet rendezvous mission.

1963

McNiece, Mili V. Halley's Comet. North American review, v. 266, Sept. 1981: 25. AP2.N7, v. 266

Fragments.

1964

McPike, Eugene F. Halley's Comet. Popular astronomy, v. 12, Dec. 1904: 685–686. QB1.P8, v. 12

Letter to the editor.

1965

McPike, Eugene F. Halley's Comet; its past history and 1910 return. A short bibliography with notes. *In* Smithsonian Institution. Smithsonian miscellaneous collections. v. 48; 1907. Washington. p. 69–74. Q11.S7, v. 48

1966

Mädler, Johann H. von. Abriss einer Geschichte der Kometenerscheinungen. *In his* Populäre Astronomie. 4., völlig umgearb. Aufl. Berlin, C. Heymann, 1849. p. 302–351. QB45.M18 1849

Includes information on the following returns of Halley's Comet (not always so identified):

141: p. 306;

837: p. 309–310 (the comet of 855 is suggested as a possibility);

989: p. 311 (the author wonders whether the comet of 931 might have been Halley's);

1066: p. 311–312;

1222: p. 312–313 (the comet of 1230 is proposed);

1301: p. 314 (the comet of 1305 is suggested as a probable return of Halley's);

1378: p. 315 (described as the earliest known certain return of Halley's Comet);

1456: p. 316;

1531: p. 317;

1607: p. 321;

1682: p. 326;

1759: p. 329–331; and

1835: p. 344–345. See also no. 19 in the "Tafel der berechneten Kometenbahnen," a folded table preceding p. 481.

1967

Mädler, Johann H. von. Die Wiederkehr des Halley'schen Kometen. *In his* Geschichte der Himmelskunde von der ältesten bis auf die neueste Zeit. 1. Bd. [Unveränderter Neudruck der Ausg. von 1873. Walluf bei Wiesbaden, M. Sändig, 1973] p. 456–462. QB15.M33 1973, v. 1

Other references of varying length to Halley's Comet occur throughout the two-volume work and can be traced through the indexes.

1968

Maggini, Mentore. Osservazioni sulla cometa di Halley. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 4, ott. 1910: 462–473. plates. QB1.S57, v. 4

Bibliographic footnotes.

Observations were made Feb. 6–June 11 at the Osservatorio Ximeniano in Florence. The report includes notes from the observing log as well as details of changes in the nucleus and its emanations, adjacent dark areas and luminous jets, the primary and secondary comae, and the length of the tail. Sketches show the appearance of the head on May 13, 29, 30, and 31, and June 2, 3, and 6.

1969

Maggini, Mentore. Sur quelques aspects présentées par la comète de Halley. Ciel et terre, 31. année, juil. 1910: 269–272. plate. QB1.C5, v. 31

The plate reproduces sketches of the comet made May 13, 30, and 31, and June 2 and 3.

1970
Magnetic and allied observations in connection with Halley's Comet. Terrestrial magnetism and atmospheric electricity, v. 15, Mar. 1910: 37–38.
QC811.J6, v. 15

Quotes extracts of letters from Faris and Birkeland outlining plans for the period in May before, during, and after the predicted passage of the earth through the comet's tail.

1971
Mahony, Ed. C. Comet rag. Boston, Mass., Daly Music Publisher [1910] 5 p.
M31.M

For piano.
Cover design (in color) by Starmer.
"Dedicated to Grace A. Marden."

1972
[Maigrot, Jean H.] Comment on attend la comète, par Henriot [pseud.] L'Illustration, t. 135, 14 mai 1910: inside back cover. illus.
AP20.I3, v. 135

Series of cartoons showing how various individuals are preparing for the comet's fateful visit.

1973
[Maigrot, Jean H.] La fin du monde, par Henriot [pseud.] L'Illustration, t. 135, 5 fév. 1910: inside back cover. illus.
AP20.I3, v. 135

Series of cartoons illustrating plans for a big comet party.

1974
[Maigrot, Jean H.] Pour en finir avec la comète, par Henriot [pseud.] L'Illustration, t. 135, 11 juin 1910: inside back cover. illus.
AP20.I3, v. 135

Series of cartoons involving a couple with two children, showing why the father rejoices at the comet's departure.

1975
Maillard, Louis. Les comètes et la comète de Halley. Lausanne, E. Frankfurter, 1910. 47 p. illus.
CU

1976
Maire, Albert. Deux lettres d'Alexandre de Humboldt à François Arago. *In* Association française pour l'avancement des sciences. Compte rendu de la 40. session, Dijon, 1911. Notes et mémoires. t. 1. Paris, 1912. p. 66–72.
Micro 06834

Concerning the nature of comets in general and Bessel's research on Halley's Comet in particular.

1977
Majus, Theodor. Kurtzer bericht von dem Strobelstern oder Cometen, so sich in diesem 1607. Jahr, im Herbstmonat am Himmel, erstlich vnter der Brust des grossen Bäres erschienen, und noch beim Arcturo des Abendes umb 7. vhr zusehen ist, durch welchen Gott der Allmechtige abermals zum vberflus die Menschen zur Busse reitzen wil, menniglich zur warnung geschrieben. Zu Magdeburg [1607] [16] p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 74.

1978
Making preparations for a comet's visit. Halley's brilliant namesake will have to submit to having its picture taken often—what scientists hope to learn during its stay. New York times, v. 59, Apr. 24, 1910, magazine section: 2. illus. N&CPR

Chiefly quotes Prof. Harold Jacoby of Columbia University.

1979
Mancini, Ernesto. Le comete e la cometa di Halley in particolare. L'Illustrazione italiana, anno 37, 3 apr. 1910: 330–332. illus., port. AP37.I4, v. 37

1980
Mandeville, J. C., James A. M. McDonnell, *and* Wesley M. Alexander. A capacitor impact sensor (CIS) on board Giotto for detection of cometary dust particles. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 189–191. illus. QB723.H2R4 1983

References (13): p. 191.

1981
Mankovics, K. A Halley-üstökös. Az Időjárás, 14. évf., 1910. máj.: 169–170. DAS

1982
Mann, F. I., J. L. Horsewood, *and* W. Bjorkman. A study of unmanned mission opportunities to comets and asteroids. Final report. Seabrook, Md., Analytical Mechanics Associates, 1974. 75 p. illus. Sci RR

NASA accession no. N75–20422.

References (12): p. 75.

Among the targets investigated is Halley's Comet.

1983
Mansch, Anton. Der Halleysche Komet und seine Geschichte. Die Welt der Technik, 72. Jahrg., 15. Mai 1910: 196–198. T3.W4, v. 72

1984
Mansfield, Helen C. The comet in New York—frivolous watchers—good trade in telescopes. Bellman, v. 8, May 28, 1910: 680. AP2.B43, v. 8

1985
Manson, Edmund S. Observations of Halley's Comet, made with the $12\frac{1}{2}$-inch telescope and filar micrometer of the Emerson McMillan Observatory of the Ohio State University. Astronomical journal, v. 26, Apr. 25, 1910: 99. QB1.A3, v. 26

Observations were made Feb. 4 and 6.

1986
Manson, Edmund S. Positions of asteroids and Halley's Comet. Astronomische Nachrichten, Bd. 191, Nr. 4567, 13. Apr. 1912: columns 127–130. QB1.A77, v. 191

Observations made May 27–28, 1910, at the Emerson McMillan Observatory of the Ohio State University, Columbus.

1987
Maraldi, Giovanni D. Observations de la comète qui a paru en 1759, et dont M. Halley avoit prédit le retour. *In* Académie des sciences, *Paris*. Mémoires de mathématique et de physique, tirés des registres de l'Académie royale des sciences, de l'année M. DCCLIX. [A Paris, De l'Impr. royale, M. DCCLXV] p. 279–287. Q46.A13, 1759

1988
Maran, Stephen P. Getting ready for Halley. Natural history, v. 90, Nov. 1981: 32, 34–39. illus. QH1.N13, v. 90

"Scientists have already begun making plans to observe this born again and again comet, due back in 1985–86." Indicates the importance of finding the comet as early as possible.

1989
Marchand, Émile. Nouvelles observations concernant les effets du passage de la terre dans la queue de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 13 juin 1910: 1575–1576. Q46.A14, v. 150

1990
Marchand, Émile. Phénomènes observés au Pic du Midi du 18 au 19 mai (passage de la comète de Halley sur le soleil). *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 30 mai 1910: 1404–1406. Q46.A14, v. 150

A correction appears in the issue of 13 juin, p. 1575.

1991
Marchand, Émile. Quelques observations relatives à la comète de Halley faites à l'observatoire du Pic-du-Midi. *In* Société météorologique de France. Annuaire, 60. année, juil. 1912: 185–207.

Bibliographic footnotes.

Describes observations of the comet made May 5, 7, 21, 29, and 31, and June 2, 4, 6, and 7, and phenomena noted at Bagnères-de-Bigorre and Pic-du-Midi on May 18–19, when the earth passed through the comet's tail.

1992
Marchand, Jean B. La doyenne des étoiles du ciel. Le Figaro, 56. année, 9 mai 1910: 1. N&CPR

See Jean Guichard's letter to the editor, "Autour de la comète," with illustration, commenting on Marchand's article, in the issue of 13 mai, p. 4.

1993
Marchand, Jean B. Le mystère, expliqué, est encore plus beau. Le Figaro, 56. année, 25 mai 1910: 1. N&CPR

The author "... maintient que cet astre [Halley's Comet] n'a point encore été visible. Il en propose la démonstration dans l'intéressante étude que voici." See the editorial, "Is It Halley's?" in the *New York Times*, v. 59, Aug. 22, 1910, p. 6 (N&CPR), commenting on Marchand's assertion that the comet seen in the spring of 1910 was not Halley's and that it would not become visible until September.

1994
Marche et positions de la comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, avril 1910: 190–191. illus. QB1.S6, v. 24
Ephemeris for the period Apr. 4–May 30. A chart shows the comet's path among the stars during this period.

1995
Marchetti, Alessandro. Della natvra delle comete. Lettera scritta all'illvstriss. sig. Francesco Redi. Si premettono per fondamento dell'opera molte osservazioni intorno alla cometa dell'anno 1680. e 1681. E nel fine se ne aggiungono alcun'altre intorno a quella del 1682. In Firenze, Alla Condotta, 1684. 110 p. fold. illus. QB721.M3 Rare Bk. Coll.
The "poscritto" with observations of the 1682 comet covers p. 103–110.

1996
[Marcus, Joseph N.] Comet Halley's long life. Comet news service, Jan. 12, 1981: 4–6. DN-Ob
Responds to a letter from Cicely M. Botley.

1997
Marcus, Joseph N. The 'delta effect' in Halley's 1910 light curve. Comet news service, July 24, 1981: 2–4. illus. DN-Ob
References (16): p. 4.

1998
Marcus, Joseph N. Halley's Comet: visibility in broad daylight in April, 1910. Comet news service, Mar. 21, 1983: 2–4. illus. DN-Ob
References (15): p. 4.

1999
Marcus, Joseph N. Max Wolf's early naked eye sighting of Halley's Comet in February, 1910. Comet news service, Oct. 21, 1982: 2–4. illus., port. DN-Ob

References (36): p. 4.
See the author's article entitled "Halley and Comets at Naked Eye Threshold: Wolf's Naked Eye Detection of Comet Schaer in 1905," with 6 references, in the Jan. 28, 1983, issue, p. 4, as well as John E. Bortle's letter on the same page, "Bortle's Naked Eye Detection of P/Encke in 1980: Comments on Wolf's Halley Sighting."

2000
Margrave, Thomas E. The 1986 apparition of Halley's Comet. Physics teacher, v. 15, Feb. 1977: 110–111. illus. QC30.P48, v. 15
References (4): p. 111.
Describes an astronomy lab exercise involving calculations for a ballistic flyby mission.

2001
Maris, Harry B. The ultra-violet light theory of comet activity. Popular astronomy, v. 40, May 1932: 268–271. QB1.P8, v. 40

Abstract, with bibliographic footnotes.

"Released by permission of the Navy Department."

Extends "a recent study by Hulburt and Maris of the relation between cometary activity and terrestrial magnetic storms" by considering "the 1835 appearance of Halley's comet, the great comets of 1843 and 1847, and the breaking up of Biela's comet of 1846 ... The cometary events of the period 1835 to 1847 give surprisingly strong support to the theory that cometary activity is similar to aurora polaris, which is dependent on ultra-violet radiation from the sun, and that most irregularities in cometary activity may be caused by irregularities in solar ultra-violet radiation."

2002
Markovich, M. Z. Prognoz i͡arkosti komety Galleĭ (1982i) v 1985–86 gg. *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 299, 19 i͡anv. 1983: 4. DN-Ob

See also the summaries of data about the comet from IAU Circulars 3742, 3753, and 3758 on p. 2 under the heading "Periodicheskai͡a kometa Galleĭ (1982i)."

2003
Markwick, Ernest E. Halley's Comet. *In* Bournemouth Natural Science Society. v. 1; 1908/9. Bournemouth, 1909. p. 72–74. plate. Q41.B64, v. 1

"Read as a General Lecture on 13th March, 1909."

2004
Markwick, Ernest E. [Halley's Comet] English mechanic and world of science, v. 90, Oct. 1, 1909, Jan. 28, 1910: 210, 610; v. 91, Feb. 11, May 20, June 3–10, 1910: 33–34, 356, 400, 425. T1.E5, v. 90–91

Letters to the editor that include comments on the comet's discovery and details of observations made at Boscombe on Dec. 3, 5, 6, and 31, 1909, and Jan. 3 and 12, 1910; Feb. 2–4; May 9; May 23–28; and June 2–3. The last letter also describes the appearance or nonappearance of the comet's nucleus on six occasions between May 25 and June 3.

2005
Marochnik, Leonid S., *and* Gennadiĭ A. Skuridin. Na vstrechu s kometoĭ Gallei͡a. Priroda, avg. 1982: 2–15. illus. (part col.), ports. Q4.P8, 1982

Bibliographic footnotes.

The first page of the article contains an introductory statement by R. Z. Sagdeev.

Among the color illustrations is a page with a photograph of the comet taken in Egypt on May 25, 1910, together with three computer-enhanced representations produced at the Institut kosmicheskikh issledovaniĭ of the Soviet Academy of Sciences.

The front cover of the issue presents a diagram, in color, of the structure of a comet near the sun, and the back cover, also in color, depicts Giotto's Arena Chapel fresco showing the star of Bethlehem as a comet.

An abridgment in English entitled "Halley's Comet," with some of the same illustrations and additional artwork by Leonid Nasyrov, appears in *Soviet Life*, Apr. 1983, p. 13–18 (DK1.U67, 1983). What appears to be a sketch made in 1910, showing the night sky over Moscow with the comet's path during late May and June, is reproduced on p. 1 of the issue.

A Hungarian translation, "A Halley-üstökössel való találkozásra készülve," appears in *Univerzum*, 313. köt., 83/4, p. 20–34 (DLC).

2006

Marre, Francis. Définition astronomique des comètes. Calcul de leur orbite. Les comètes dont le retour peut être prévu. Caractéristiques de la comète de Halley. La terre va-t-elle traverser sa chevelure? Qu'adviendra-t-il de notre globle [sic], le 18 mai prochain? Les cinq comètes de 1910. Le Correspondant, t. 238, 10 mars 1910: 1023–1030. AP20.C8, v. 238

2007

Marsden, Brian G. Catalogue of cometary orbits. 4th ed. [Cambridge, Mass., Smithsonian Astrophysical Observatory] 1982. 97 p.

At head of title: Central Bureau for Astronomical Telegrams. Minor Planet Center. International Astronomical Union.

References (18): p. 6.

Includes data for 29 returns of Halley's Comet (from 240 B.C. on); sources of data are identified in "References and Notes" (p. 43–58).

Made available (with a few changes) in a "first trade edition" in 1983 by Enslow Publishers, Hillside, N.J. (96 p. QB357.M37 1983).

2008

Marsden, Brian G. Periodic comet Halley. Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1982. card. ([IAU] Circular no. 3688) DN-Ob

"D. C. Jewitt, G. E. Danielson and R. J. Terrile, California Institute of Technology, write that an unsuccessful search for this comet was made on 1981 Dec. 18.3 UT using the 5.1-m telescope."

2009

Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1982. card. ([IAU] Circular no. 3737) DN-Ob

The recovery of the comet was reported by D. C. Jewitt, G. E. Danielson, J. E. Gunn, J. A. Westphal, D. P. Schneider, A. Dressler, M. Schmidt, and B. A. Zimmerman, "using the Space Telescope Wide-Field Planetary Camera Investigation Definition Team charge-coupled device placed at the prime focus of the 5.1-m telescope at Palomar Observatory."

2010

Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1982. card. ([IAU] Circular no. 3742) DN-Ob

The comet's recovery is confirmed by Belton and Butcher at Kitt Peak, using a cryogenic camera and charge-coupled device on the 4-m reflector on the nights of Oct. 18 and 20.

2011
Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1982. card. ([IAU] Circular no. 3753) DN-Ob

J. Baudrand and others furnish "precise geocentric positions, obtained using the prime-focus electronographic camera on the Canada-France-Hawaii telescope." Observations were made Oct. 16 and 17 and Nov. 15 and 16.

2012
Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1982. card. ([IAU] Circular no. 3758) DN-Ob

R. M. West gives a precise position derived "from a 45-min exposure by H. Pedersen using a charge-coupled device on the Danish 1.5-m reflector at La Silla" on Dec. 10.

The image was published in *Sky & Telescope*, v. 65, Mar. 1983, p. 222 (QB1.S536, v. 65).

2013
Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1983. card. ([IAU] Circular no. 3767) DN-Ob

Improved orbital elements, derived from 625 observations made Aug. 21, 1835–Dec. 10, 1982, are reported by Yeomans.

2014
Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1983. card. ([IAU] Circular no. 3770) DN-Ob

Another position, measured by R. M. West from a 45-minute exposure by H. Pedersen on Jan. 14 with the 1.5-meter Danish reflector at La Silla, is reported.

2015
Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1983. card. ([IAU] Circular no. 3776) DN-Ob

Belton and Butcher at Kitt Peak report a precise position derived from averaging twenty 60-second exposures with the 4-meter reflector on Dec. 13.

2015a
Marsden, Brian G. Periodic comet Halley (1982i). Cambridge, Mass., Central Bureau for Astronomical Telegrams, International Astronomical Union, 1983. card. ([IAU] Circular no. 3873) DN-Ob

M. J. S. Belton, P. A. Wehinger, and S. Wyckoff report positions obtained on Feb. 13 "with an RCA CCD at the prime focus of the Mayall telescope, Kitt Peak National Observatory, with a scale of 0.″58/pixel."

2016
Marsh, G. F. Observing Halley's Comet from the summit of Mount Whitney. *In* Astronomical Society of the Pacific. Publications, v. 23, Oct. 1911: 240–242. QB1.A4, v. 23

Prof. R. G. Aitken contributes a short introduction to the text of a letter received by him from Mr. Marsh, in which he describes his climb and the observations he made on May 23, 1910. Aitken states, "So far as I am aware, Mt. Whitney is by far the highest point on the Earth's surface to which anyone has climbed for the sake of seeing a comet, and a record of the feat seems of interest."

Most of the letter and Aitken's introductory remarks are reprinted in *Popular Astronomy*, v. 19, Nov. 1911, p. 578 (QB1.P8, v. 19), and Pio Emanuelli reports on Marsh's exploit in a short article entitled "La cometa d'Halley vista a 4420 metri, sul monte Whitney" in *Rivista di astronomia e scienze affini*, anno 5, dic. 1911, p. 572.

2017
Marsolleau, Louis. L'eau de la comète. Le Figaro, 56. année, 13 mai 1910: 1. N&CPR

Poem. Hopes for "comet wine" are dashed by the excessively rainy weather.

Another poem by the same writer, entitled "Sauvés!!" appears in the issue of 19 mai, p. 1.

2018
Martin, Benjamin. The theory of comets, illustrated, in four parts. The whole adapted to, and exemplified in the orbit of the comet of the year 1682, whose return is now near at hand. London, 1757. 57 p. QB721.M33 Rare Bk. Coll.

2019
Martin, Benjamin. A view of the solar system and orbit of the comet, (with its proper elevation,) which will next return, truely representing all its appearances for any part of the year. [n.p.] 1757. broadside (1 p.) illus.

Held by the British Library under shelfmark 10. (3.).

2020
Martínez, Marcos. La vuelta del gran cometa de Halley. Razón y fe, t. 26, enero-feb., abr. 1910: 73–81, 166–179, 482–493; t. 27, jun.-agosto: 217–227, 492–504. illus.

Bibliographic footnotes.

2021
Martini, Christophorus. Astronomische Beschreibung, des jüngst erschienenen Cometen. [Hamburg] M DC LXXXII. [8] p.

Held by the British Library under shelfmark 8560. bbb. 6. (7.).

2022
Marx, Siegfried. Der Halley'sche Komet wird erwartet. Jenaer Rundschau, 27. Jahrg., Heft 3, 1982: 143–145. illus. TS510.J4, v. 27

References (5): p. 144–145.

An English translation, "Halley's Comet Is Expected," appears in *Jena Review*, v. 27, no. 3, 1982, p. 143–145.

2023

Mascart, Jean M. La comète de Halley. Paris, Gauthier-Villars, 1910. 107 p. illus. QB723.H2M3

At head of title: Société astronomique de Bordeaux.

Bibliographic footnotes.

Contents: Introduction.—Les orbites des comètes.—La comète de 1682.—Le retour en 1759.—La comète de Halley dans l'histoire.—L'apparition de 1835.—Remarques sur les diverses apparitions.—Le retour en 1910.—Le passage dans la queue.

A review by Father Johan Stein appears in *Revue des questions scientifiques*, t. 68, oct. 1910, p. 593–600 (Q2.R45, v. 68).

2024

Mascart, Jean M. [La comète de Halley] Le Figaro, 56. année, 12 avril 1910: 1; 17 mai: 1; 23 mai: 1–2; 15 juin: 1. N&CPR

Contents: En attendant la comète.—En attendant la comète: au sommet du Guajara.—La comète de Halley.—J'ai vu la comete.

See also the article by Charles Dauzats, "Une photographie de la comète," in the issue of 31 mai, p. 1, illustrated with a photograph taken by Mascart at Tenerife.

2025

Mascart, Jean M. La comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, sept. 1910: 385–394. illus., plate. QB1.S6, v. 24

Bibliographic footnotes.

Observations made during an expedition to Tenerife. Photographs taken May 5, 7, 11, 14, and 15 and sketches made Apr. 12 and 13 are reproduced.

2026

Mascart, Jean M. Les conditions d'observation dans la montagne. Astronomische Nachrichten, Bd. 186, Nr. 4461, 12. Dez. 1910: columns 337–344. plate. QB1.A77, v. 186

Describes conditions on Guajara, the second-highest peak of Tenerife, as they affect astronomical and meteorological observations. The plate reproduces photographs of Halley's Comet taken May 1, 3, and 16, and sketches of the head made Apr. 16, 18, and 27.

2027

Mascart, Jean M. Impressions et observations dans un voyage à Tenerife. Paris, E. Flammarion [1912?] 366 p. illus., map, ports. Q115.M4

"Index bibliographique": p. [361]–364.

Partial contents: L'importance historique de la comète de Halley (p. [80]–105).—Les singularités de la comète (p. [106]–116).—Organisation des travaux astronomiques (p. [328]–343).—Details des observations (p. [344]–[345]).—Notes: comète de Halley (p. [347]–352).—Nuit du passage dans la queue (p. [355]–356).—Conclusion (p. [357]–360).

Photographs of the comet taken at Tenerife are reproduced on p. [191], [201], and [247].

2028

Mascart, Jean M. Un observatoire près d'un volcan. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 4, dic. 1910: 585–596. plates. QB1.S57, v. 4

Includes tabular data and notes on observations of Halley's Comet made Apr. 12–20, 22, 25–27, and 29, and May 1–16, 1910. The plates include sketches of the comet's head made Apr. 14–16, 18–20, and 25, and photographs taken May 4, 6, and 12.

2029

Mascart, Jean M. Photographie de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 6 juin 1910: 1497–1499. Q46.A14, v. 150

Presents observations made during the night of May 18–19.

2030

Mascart, Jean M. Photographies de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 25 juil. 1910: 290–291. plate. Q46.A14, v. 151

The plate reproduces photographs taken Apr. 19, 20, 26, and 27, and May 1, 3, 5, 12, 13, and 15.

2031

Mascart, Jean M. Quelques observations à Ténériffe. La Nature, 38. année, 25 juin 1910: 63–64. illus. Q2.N2, v. 38.2

Includes remarks on the comet and reproduces a photograph taken May 4.

2032

Mašek, V. Vlast. O kometě Halleyově a všech význačných kometách vůbec. V Brně, "Světlo," 1910. 24 p. ("Světlo," lidový list kulturní a střídmosti, 1. roč., čís. 5. a)

2033

Masini, Enrico. Paolo dal Pozzo Toscanelli e la cometa di Halley. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 4, nov. 1910: 526–528. QB1.S57, v. 4

2034

Mass spectrometer experiments for the European space probe GIOTTO. Dornier post (English ed.), no. 2, 1983: 75–78. illus. (part col.)

By Gerhard Neumann and Elmar Weber (see inside back cover of issue).

2035

Mather, Increase. ΚΟΜΗΤΟΓΡΑϕΙΑ; or, A discourse concerning comets, wherein the nature of blazing stars is enquired into: with an historical account of all the comets which have appeared from the beginning of the world unto this present year, M.DC.LXXXIII. Expressing the place in the heavens, where they were seen, their motion, forms, duration; and the remarkable events which have followed in the world, so far as they have been by learned men observed. As also two sermons occasioned by the late blazing stars. Boston in New-England, Printed by S. G. for S. S. and sold by J.

Browning at the corner of the Prison Lane next the Town-House, 1683. 143, 38, 32 p. QB724.M3 1683 Rare Bk. Coll.

Evans 352.

The second sermon, "The Latter Sign Discoursed of," was evoked by the 1682 appearance of the comet.

Appearances of comets that can probably be identified as Halley's Comet are described:

A.D. 66, p. 38–39;
A.D. 684, p. 55;
A.D. 837, p. 57;
A.D. 912, p. 60;
A.D. 1066, p. 67–68;
A.D. 1145, p. 69–70;
A.D. 1301, p. 78;
A.D. 1456, p. 89–90;
A.D. 1531, p. 96–97;
A.D. 1607, p. 107–108; and
A.D. 1682, p. 128–131.

2036

Matkevich, Leopol'd L. Ephemeride des Halleyschen Kometen. Astronomische Nachrichten, Bd. 181, Nr. 4330, 12. Juni 1909: columns 161–162. QB1.A77, v. 181

Data are provided for Aug. 5, 1909–May 22, 1910. Reproduced in the *Journal* of the British Astronomical Association, v. 19, July 1909, p. 408–409 (QB1.B75, v. 19).

2037

Matsuo, Hiroki. Planet-A keikaku. Keisoku to seigyo; Journal of the Society of Instrument and Control Engineers, dai 21-kan, Shōwa 57-nen 2-gatsu [Feb. 1982]: 218–222. illus. 6245, v. 21 Orien Japan

References (2): p. 222.

2038

Matthews, Edgar. [Halley's Comet] English mechanic and world of science, v. 91, June 3, 1910: 400. T1.E5, v. 91

Letter to the editor describing observation made at Sudbury May 26.

2039

Mauder, Josef. Missverständnis. Meggendorfer-Blätter, 81. Bd., 10. Mai 1910: 114. illus.

Cartoon. A farmer leading a cow approaches a surveying party and asks permission to look at the comet.

2040

Maunder, Edward Walter. Halley's Comet. Wesleyan Methodist magazine, v. 133, Apr. 1910: 256–261. illus. BX8201.M2, v. 133

2041

Mayer, Lambert. Schreiben des Herrn L. Mayer Directors der Sternwarte in Ofen [Buda] Astronomische Nachrichten, 13. Bd., Nr. 289, 17. Oct. 1835: columns 13–14. QB1.A77, v. 13

Reports observations made Aug. 30–Sept. 26.

352

2042
Mayer, Tobias. Astronomical observations, made at Gottingen, from 1756 to 1761. Published by order of the Commissioners of Longitude. London, Printed by T. Bensley, and sold by J. Murray, 1826. 92, 61 p.
DN-Ob; MH; MiU

On p. 43–45 of pt. 2 are recorded observations of Halley's Comet made Apr. 30 and May 1, 3, 5, 7, and 9, 1759. Sketches show the position of the comet in relation to fixed stars in the same field.

2043
A Medal featuring Halley's Comet. Numismatist, v. 36, Jan. 1923: 39. illus.
CJ1.N8, v. 36

The obverse features a resplendent sun, with the comet below, its tail touching the earth at the bottom. The inscription reads "Jede Wolke—so schwarz sie droht—dem Himmel zugewandt—doch ihre lichte Sonnenseite hat." The words "Komet Halley" span the representation of the comet; beneath is the date "19.–20. Mai 1910," referring to the night when the earth was to pass through the comet's tail. The writer of this note has misinterpreted the date to mean that the medal was struck in 1920.

2044
Meeus, Jean. De volgende terugkeer van de komeet van Halley. Hemel en dampkring, jaarg. 65, aflevering 12, 1967: 344.
QB1.N43, v. 65

2045
[Mehring, Sigmar] Der Komet in Sicht. Ulk, 39. Jahrg., 14. Jan. 1910: [2]
AP105.U4, v. 39

Satiric verses on the possibility that the comet's tail will poison the earth's atmosphere. The poet finds it doubtful whether the celestial visitor could outdo humanity in this respect.

2046
Mellish, John E. Comet 1910a—Halley's Comet. English mechanic and world of science, v. 91, Mar. 25, 1910: 173.
T1.E5, v. 91

Letter to the editor with magnitude estimates for Halley's Comet as observed on Dec. 4, Dec. 9, Jan. 21, Feb. 4, and Mar. 3.

2047
The Menace in the skies: will Halley's Comet harm the earth? The differing views of two astronomers. Harper's weekly, v. 54, May 14, 1910: 11–12, 30. illus.
Micro 02231

Contents: 1. The case for the comet, by D. J. McAdam.—2. The case for the earth, by Harold Jacoby.

Comments by E. B. Johnson, in a letter headed "Suppose a Comet—," appear in the May 28 issue, p. 6.

2048
Mendis, D. A. Comets and cometary missions. *In* Space research. v. 20. Proceedings of the open meetings of the working groups on physical sciences of the twenty-second plenary meeting of COSPAR, Bangalore, India, 29 May–9 June 1979. Editor: M. J. Rycroft. Oxford, New York, Pergamon Press [1980] p. 177–188. illus.
QC801.S88, v. 20

References (25): p. 187–188.

Includes description of the subsequently scrapped NASA/ESA plans for a dual mission involving a flyby of P/Halley in late 1985 and a rendezvous with P/Tempel 2 in mid-1988.

2049

Menoux, R. Électricité, théorie nouvelle par explosion. Les ions en électrostatique. La sphère électrisée et l'influence, la pesanteur, la pesanteur appliquée à la comète de Halley, le courant. Paris, A. Dunod et E. Pinat, 1912. 60 p. illus.

Held by the Bibliothèque nationale (Paris) under shelfmark 8° V. 36081.

2050

Merfield, Charles J. Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 20, Jan. 1910: 201–202. QB1.B75, v. 20

Abstract of a letter to W. J. MacDonnell that includes an ephemeris for the period Sept. 10–Dec. 31, 1909.

2051

Merfield, Charles J. Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 21, Oct. 1910: 46–47. QB1.B75, v. 21

Letter to the editor commenting on methods of calculating orbital elements.

2052

Merfield, Charles J. Method of finding the correction to the predicted time of perihelion passage of a planet or comet, and its application to finding this correction for Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 20, Apr. 1910: 365–367. illus. QB1.B75, v. 20

Read at a meeting of the New South Wales Branch, Mar. 18, 1910.

See also report and comments in the Jan. 1910 issue, p. 214, on elements deduced by Merfield.

2053

Merfield, Charles J. The orbit-elements of Halley's Comet. Observatory, v. 33, Nov. 1910: 445. QB1.O2, v. 33

Letter to the editor.

2054

Merfield, Charles J. Provisional orbit elements of Comet Halley. Astronomische Nachrichten, Bd. 184, Nr. 4406, 22. Apr. 1910: columns 225–232. QB1.A77, v. 184

2055

Messer, Earl S. Halley's Comet. Camera craft, v. 17, June 1910: 230. illus. TR1.C3, v. 17

Letter to the editor accompanying a photograph taken 3:30–3:56 a.m. on May 14 at Mount Wilson.

2056

Messerschmitt, Johann B. Magnetische Aufzeichnungen beim Vorübergange des Halleyschen Kometen. Meteorologische Zeitschrift, Bd. 27, Juli 1910: 314–316. illus. QC851.M3, v. 27

2057
Messerschmitt, Johann B. Über den Lauf des Kometen Halley in der nächsten Zeit. Prometheus, 21. Jahrg., 9. Feb. 1910: 289–291. illus.

2058
Messerschmitt, Johann B. Die Wiederkehr des Halley'schen Kometen. Naturwissenschaftliche Wochenschrift, 24. Bd., 24. Jan. 1909: 58–61. illus.
Q3.N9, v. 24

2059
Messier, Charles. [Comète découverte et observée] en 1759. *In* France. *Bureau des longitudes*. Connaissance des tems . . . pour l'an 1810. A Paris, De l'Impr. impériale, 1808. p. 362–364. QB8.F9, 1810

2060
Metcalf, Joel H. Observations of Halley's Comet. Popular astronomy, v. 18, Aug./Sept. 1910: 433. QB1.P8, v. 18

Observations made May 16–19 at Taunton, Mass.

2061
Metcalf, Joel H. Searching for Halley's Comet. Popular astronomy, v. 17, Aug./Sept. 1909: 440–442. QB1.P8, v. 17

Reports negative findings on plates taken Mar. 5, Oct. 19, Oct. 30, and Dec. 20, 1908.

2062
Meteorological phenomena and Halley's Comet. *In* The New international year book, a compendium of the world's progress. 1910. New York, Dodd, Mead, 1911. p. 453. AE5.I64, 1910

2063
Meunier, Dauphin. La comète de Halley: une lettre inconnue de Voltaire. Le Figaro, supplément littéraire, nouv. sér., 6. année, 21 mai 1910: 1.
N&CPR

Includes the text of Voltaire's letter of Aug. 27, 1759, to Clairaut (see item 476).

2064
Meyer, Max Wilhelm. "Als er gekommen war . . ." Velhagen & Klasings Monatshefte, 24. Jahrg., 3. Bd., Aug. 1910: 525–528. AP30.V4, v. 24.3

2065
Meyer, Max Wilhelm. Der Halleysche Komet. Velhagen & Klasings Monatshefte, 24. Jahrg., 2. Bd., Feb. 1910: 241–250. illus.
AP30.V4, v. 24.2

2066
Meyer, Max Wilhelm. Der Halleysche Komet. Die Woche, 11. Jahrg., 9. Okt. 1909: 1749–1752. illus. Micro 27817

2067

Michael, J. Kometen-Marsch. Op. 6. Leipzig, Zimmermann, 1910.

For orchestra.

Arrangements for salon orchestra and for piano were also published.

2068

Michielson, H. F. A rendezvous with Halley's Comet in 1985–1986. Journal of spacecraft and rockets, v. 5, Mar. 1968: 328–334. illus. TL787.A62A2, v. 5

References (10): p. 334.

Revision of AIAA Paper 67–614, given at the AIAA Guidance, Control, and Flight Dynamics Conference, Huntsville, Ala., Aug. 14–16, 1967.

A short article based on this study, "Lot sondy kosmicznej na spotkanie z kometą Halley'a?" by Michał Czerwiecki, appears in *Urania* (Kraków), r. 40, lip./sierp. 1969, p. 205–206 (QB1.U7, v. 40).

2069

Miethe, Adolf. Bedeckung des Sternes $8^{m}5$ AG Lpz I 4615 durch den Kern des Halleyschen Kometen. Astronomische Nachrichten, Bd. 185, Nr. 4417, 3. Juni 1910: columns 15–16. QB1.A77, v. 185

The occultation took place on May 24; the designation of the occulted star should read AG Lpz II 4615.

An English translation by Father Rigge appears in *America*, v. 3, July 2, 1910, p. 319 (BX801.A5, v. 3)

2070

Mikhailov, Aleksandr A. K poi͡avlenii͡u komety Gallei͡a. Moskva, Izd. Kruzhka li͡ubiteleĭ astronomii, Tip. T-va I. D. Sytina, 1910. 8 p. illus.

2071

Millard, Bailey. In the year of the comet. Technical world magazine, v. 13, July 1910: 487–496. illus. T1.T2, v. 13

Suggests that comets may influence the earth's atmosphere and that Halley's Comet may have been to some extent "responsible for the unprecedented atmospheric and seismic disturbances" that marked the first half of 1910.

2072

Miller, A. G., *pseud.* Ein Komet namens Halley. *In his* Sonne, Mond und Sterne; der Roman der Astronomie. Hamburg, P. Zsolnay Verlag [1957] p. [177]–181. port. QB15.M5

2073

Millochau, Gaston. Les comètes. La Science au XX^e^ siècle, 8. année, 15 mars 1910: 17–24. illus. Q2.S3, v. 8

About a third of the article deals with Halley's Comet and its 1910 return.

2074

Millochau, Gaston, *and* H. Godard. Observations de la comète de Halley à l'observatoire du Pic du Midi. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 151, 11 juil. 1910: 135–137. Q46.A14, v. 151

Made May 21–June 6.

2075
Millochau, Gaston. Observations effectuées au Pic du Midi. *In* Société astronomique de France. Bulletin, 24. année, déc. 1910: 549–550. illus.
QB1.S6, v. 24

A report of observations made May 29 is accompanied by a photograph taken that evening.

2076
Millosevich, Elia, Emilio Bianchi, *and* Giovanni Zappa. Beobachtungen des Halleyschen Kometen 1909 c auf der Sternwarte des Collegio Romano in Rom. Astronomische Nachrichten, Bd. 183, Nr. 4373, 4. Dez. 1909: columns 79–80. QB1.A77, v. 183

Text in Italian.
Observations made Nov. 7–12.

2077
Millosevich, Elia. La cometa di Halley. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 3, luglio 1909: 233–240.

2078
Millosevich, Elia. Nuove posizioni della cometa di Halley e qualche notizia sulla posizione della cometa rapporto alla terra. *In* Accademia nazionale dei Lincei, *Rome. Classe di scienze fisiche, matematiche e naturali.* Rendiconti, ser. 5, v. 19, 2 genn. 1910: 3–4. AS222.R63, s. 5, v. 19

2079
Millosevich, Elia. Osservazioni della cometa 1909c ≡ cometa di Halley, fatte al R. Osservatorio astronomico al Collegio Romano. *In* Accademia nazionale dei Lincei, *Rome. Classe di scienze fisiche, matematiche e naturali.* Rendiconti, ser. 5, v. 18, 5 dic. 1909: 519–520. AS222.R63, s. 5, v. 18

2080
Millosevich, Elia. Osservazioni di comete fatte agli equatoriali del R. Osservatorio al Collegio Romano. Astronomische Nachrichten, Bd. 186, Nr. 4456, 20. Nov. 1910: columns 257–264. QB1.A77, v. 186

Includes observations of Halley's Comet made Nov. 19, 1909–July 6, 1910. An additional observation of May 21, 1910, is reported in Bd. 188, Nr. 4492, 15. Apr. 1911, columns 53–54.

2081
Millosevich, Elia. Sulle comete e in ispecial modo sulla cometa di Halley, da una conferenza detta in Roma, presso la Società di fisica, il 26 febbraio 1910. Conferenze e prolusioni, anno 3, fasc. 9, 1910: 161–164.

At the end of the lecture there is a short ephemeris for the period May 2–30.

2082
Milovanov, V. N. Beobachtungen des Halleyschen Kometen 1909 c an der Warschauer Sternwarte. Astronomische Nachrichten, Bd. 193, Nr. 4623, 8. Jan. 1913: columns 271–274. QB1.A77, v. 193

Made May 24–June 11, 1910.

2083

Min, Kh. A. Idushchai͡a kometa Gallei͡a i predskazanīe o kont͡si͡e svi͡eta po istoricheskim zapiskam znamenitago astronoma Nostradamusa, vracha Karla IX. Moskva, Tip. Sharapova, 1909. xiv p. illus.

2084

Miranda y Marrón, Manuel. Las Acuáridas y el cometa de Halley. *In* Sociedad Astronómica de México. Boletín, año 11, marzo de 1912: 59–61. QB1.S55, v. 11

A. C. D. Crommelin provides an English version of some excerpts, with comments, in *Knowledge*, new ser., v. 9, May 1912, p. 186 (Q1.K7, n.s., v. 9).

2085

Mission to Halley's Comet is on the cards again. New scientist, v. 87, July 10, 1980: 95. illus. Q1.N52, v. 87

On the plans of the European Space Agency. "Halley's comet may become a little congested, with perhaps four missions arriving there in 1986."

2086

Mr. Comet himself will be frightened when he sees our audacious haberdashery. Chicago Sunday tribune, v. 69, May 8, 1910, pt. 9: 2. illus. N&CPR

On the application of comet motifs to vests, neckties, handkerchiefs, and socks.

2087

Mitchel, Ormsby M. [Halley's Comet] *In his* The planetary and stellar worlds: a popular exposition of the great discoveries and theories of modern astronomy. In a series of ten lectures. New York, Baker & Scribner, 1848. p. 226–233. plates. QB51.M68 1848

The three plates reproduce drawings of the comet made by Sir John Herschel on Oct. 29, 1835, and Jan. 28, 1836, and Struve's drawing of Oct. 12, 1835.

2088

Mitchel, Ormsby M. Halley's Comet. Sidereal messenger, v. 2, July 1848: 94–96. plate. QB1.S5, v. 2

A plate reproducing a drawing of the comet by Wilhelm Struve appears in the June 1848 issue.

2089

Mitchell, Samuel Alfred. Disappointments of the comet. English mechanic and world of science, v. 91, July 22, 1910: 563–564. T1.E5, v. 91

Copied from the *New York World*.

2090

Mitchell, Samuel Alfred. [Halley's Comet] Guide to nature, v. 2, Nov.–Dec. 1909, Jan., Apr. 1910: 250–252, 288–289, 327–328, 402–403; v. 3, May–July 1910: 18–19, 60–62, 100–103. illus. QH1.G8, v. 2–3

The position of the comet is marked on the evening sky map appearing in each issue from Nov. 1909 through Feb./Mar. 1910. The Apr. 1910 issue has a small sketch of the orbits of Venus, the earth, and the comet during the time of its nearest approach to the sun (Feb. 23–May 30).

2091
Mitchell, Samuel Alfred. The return of Halley's Comet. American review of reviews, v. 41, Apr. 1910: 443–448. illus. AP2.R4, v. 41

2092
Mitchell, Samuel Alfred. Through the tail of Halley's Comet. World (New York) magazine, May 8, 1910: 4. illus. N&CPR

A diagram shows the comet's path in the sky, May 20–30.

2093
Mitteilungen über den Halleyschen Kometen. Astronomische Nachrichten, Bd. 182, Nr. 4363, 13. Okt. 1909: 319–320. QB1.A77, v. 182

Reports and perihelion predictions by Elia Millosevich (Rome) and George M. Searle (New York).

2094
Mitteilungen über den Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4411, 12. Mai 1910: columns 317–320. QB1.A77, v. 184

Short reports from the Lick Observatory, Königstuhl, Johannesburg, and Starya Doubossary, from Campbell, Wolf, Innes, and Donitch, respectively, and summaries of information by Kobold from Harvard Bulletins 398 and 399 and Lick Observatory Bulletin 179. Pickering's telegram and the note on Harvard Bulletin 398 were first published in a supplement to Nr. 4407 (29. Apr.).

2095
Mitteilungen vom Halleyschen Kometen. Astronomische Nachrichten, Bd. 184, Nr. 4414, 27. Mai 1910: columns 365–370. QB1.A77, v. 184

Reports (mostly brief) of observations made May 18–24 from Hartwig in Bamberg, Strömgren in Copenhagen, Wolf in Königstuhl, Bergstrand and Zeipel in Uppsala, Krebs in Grossflottbek, Rudzki in Krakow, Franz in Breslau, Kobold in Kiel, Pickering in Cambridge (relaying reports from the Lick Observatory), Sykora in Tashkend, Eginitis in Athens, the Johannesburg Observatory, Donitch in Odessa, Bohlin in Stockholm, Archenhold in Berlin, Schorr in Bergedorf, and Brendel in Frankfurt am Main. The Lick and Johannesburg reports were also published in the *Comptes rendus hebdomadaires* of the Académie des sciences, Paris, t. 150, 23 mai 1910, p. 1285 (Q46.A14, v. 150).

2096
Mitteilungen vom Halleyschen Kometen. Astronomische Nachrichten, Bd. 185, Nr. 4421, 28. Juni 1910: columns 69–78. illus. QB1.A77, v. 185

Longer reports of observations made from mid-May through early June, from Wolf in Königstuhl, Hugo Seeliger in Munich, Eginitis in Athens (his essay is entitled "Le Passage de la comète de Halley devant le soleil"), and Comas Solá in Barcelona (one of whose two reports is entitled "El Núcleo del cometa de Halley el 4 de junio"). Telegrams from Comas Solá reporting observations of the nucleus on June 2 and 4 appear in Nr. 4417, 3. Juni 1910, columns 15–16, and Nr. 4418, 9. Juni 1910, columns 29–30.

2097
Mize, Scott. Funding for proposed probe to Halley's Comet. International comet quarterly, v. 4, Jan. 1982: 15. DN-Ob

2098
Mizser, Attila. A Halley-üstökös középkori ábrázolásai. Föld és ég, 17. évf., 1982. máj.: 140–141. illus. Q4.F64, v. 17

On pictures of the comet in the Bayeux Tapestry, the Canterbury psalter, Giotto's Arena Chapel fresco, and the Nuremberg Chronicle.

2099
Möbius, August F. Die wahre und die scheinbare Bahn des Halley'schen Kometen bei seiner Wiederkunft im Jahre 1835 anschaulich dargestellt und allgemein fasslich erklärt. Leipzig, Bei G. J. Göschen, 1834. 35 p. fold. plate. NN; NNC

The plate, with three figures, shows the comet's entire orbit, its near-sun orbit with positions of the comet and the earth indicated during the period Aug. 6, 1835 – Apr. 12, 1836, and the comet's path among the constellations during the same period.

——— 3., verb. und verm. Ausg. Leipzig, G. J. Göschen, 1835. 41 p. fold. plate. ICU

2100
Moir, James. Halley's Comet. Nature, v. 84, July 7, 1910: 9. illus. QI.N2, v. 84

Letter to the editor with a photograph taken May 17 at Johannesburg.

2101
Mokhnach, D. O. Opredelenie fizicheskikh kharakteristik t͡sianovykh galosov komety Gallei͡a 1910 II. *In* Akademii͡a nauk SSSR. Doklady, t. 142, 11 i͡anv. 1962: 304–307. AS262.S3663, v. 142

References (6): p. 307.

An English translation, "Determination of the Physical Properties of the Cyanogen Envelopes of Halley's Comet, 1910-II," appears in *Soviet Physics "Doklady,"* v. 7, July 1962, p. 1–3 (QC1.A386, v. 7).

2102
Moieri, Elie de. Enarratio apodictica et meteorologica de novo cometâ anni 1607. Bernae, 1608.

Cited in Lalande's *Bibliographie astronomique*, p. 149.

2103
Mondello, Ugo. Osservazioni della cometa Halley, eseguite nell'Osservatorio di Ardenza al Mare. Livorno, Tip. A. Debatte, 1910. 9 p.

2104
Mongré, Paul. Der Komet. Die Neue Rundschau, 21. Jahrg., Mai 1910: 708–712. AP30.N5, v. 21

Satirical sketch in the form of a conversation between the editor and the publisher of a monthly periodical about an article on Halley's Comet.

2105

Montanari, Geminiano. Copia di lettera scritta all'illustrissimo signore Antonio Magliabechi, bibliotecario del sereniss. Gran Dvca di Toscana, intorno alla nvova cometa apparsa quest'anno 1682. sotto i piedi dell'Orsa Maggiore. In Padoua Per P. M. Frambotto, 1682. 8 p. illus. NN

The letter is dated Padoua, 11. Settembre 1682.

The engraving on the title page shows the comet's path in the heavens, Aug. 27–Sept. 10, 1682; beneath this is a sketch of the comet itself.

A notice appears in *Acta Eruditorum*, Mart. 1683, p. 128.

—— Copia di lettera scritta all'illustrissimo Sig. Antonio Magliabechi, bibliotecario del serenissimo Gran Dvca di Toscana, intorno la cometa apparsa l'anno 1682. sotto i piedi dell'Orsa Maggiore. *In* Roberti, Gaudenzio, *comp.* Miscellanea italica physico-mathematica. Bononiae, Ex Typographia Pisariana, M.DC.XCII. p. 561–572. plate. NN

2106

Montangerand, Louis. Observations de la comète de Halley, et d'occultations d'étoiles, faites à l'observatoire de Toulouse, à l'équatorial Brunner-Henry. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 151, 4 juil. 1910: 47–48. Q46.A14, v. 151

Made June 6–18.

2107

Montangerand, Louis, *and* F. Rossard. Observations de la comète de Halley faites à l'observatoire de Toulouse à l'équatorial Brunner-Henry. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 149, 27 déc. 1909: 1351–1352. Q46.A14, v. 149

Made Dec. 4–16.

2108

Montangerand, Louis, *and* F. Rossard. Observations de planètes et de la comète de Halley, faites à l'observatoire de Toulouse (équatorial Brunner-Henry de $0^{m},38$ d'ouverture). Bulletin astronomique, t. 27, nov. 1910: 441–442. QB1.B9, v. 27

Halley's Comet: p. 441. Observations were made Dec. 30, 1909 – Feb. 9, 1910. Comparison stars are listed on p. 442.

2109

Monte, Enrique A. del. El cometa de Halley: un modelo de su órbita. El Figaro (Havana), año 26, mayo 15 de 1910: 233–234. illus. AP63.F5, v. 26

2110

Monzon, George E. A Halley's Comet buff in 1910, he turns a skeptical eye toward Kohoutek. Los Angeles times, v. 93, Dec. 26, 1973, pt. 2: 7. N&CPR

Recalling his experiences as a boy of 13 in Guatemala during the 1910 visit of Halley's Comet, he mentions seeing it early on a mid-January morning. This evoked a letter from George Abell and Miroslav M. Plavec, published under the heading "Halley's Comet" in the Dec. 31 issue, pt. 2, p. 4, in which they suggest that Monzon may then have been seeing Comet 1910a rather than Halley's.

2111

Moore, Frederick. A treatise on the nature and properties of comets, with special reference to the Comet of Halley, now visible in England, comprising a concise description of every thing connected with its history and appearance, from the observations of 1682 to the present year. Also, a sketch of the comets of Encke and Biela. London, Wakelin [1835] 12 p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 411.

The frontispiece depicts "The course of Halley's Comet, from the 7th day of August 1835, to 7th of February, 1836."

2112

Moore, Patrick. Halley's Comet. *In his* Guide to comets. [Completely rev. and new ed.] Guildford, Lutterworth Press [1977] p. 56–66. illus., plate. QB721.4.M66 1977

The plate reproduces two photographs taken at the Lick Observatory on June 6 and 7, 1910.

2113

Moraine, George W. The comet March & two step. Janesville, Wis., Peerless Music Pub. Co. [1910] 5 p. M28.M

For piano.

Cover design in color.

2114

Morando, B. The contribution of French astronomers to the orbit determination of Halley's Comet. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 297–298.

References (3): p. 298.

2115

Moreaux, Arnould. If you fear the comet, live on a mountain-top. Sketch, v. 70, Apr. 27, 1910: 79. illus. AP4.S6, v. 70

Illustrates one of the dire predictions of the earth's fate should the comet strike it.

2116

Moreaux, Arnould. Reassuring for fearful Chinese: why Halley's Comet and the earth will not collide. Illustrated London news, v. 136, Apr. 23, 1910: 597. illus. AP4.I3, v. 136

The diagram is not after all very reassuring, as it does not indicate the dates on which the two objects will be at the different locations shown.

2117

Moreels, G., J. Clairemidi, *and* J. P. Parisot. Observations of Halley's Comet with intensified photodiode arrays. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 185–190. illus.

References (9): p. 190.

2118

Morehouse, Daniel W. Halley's Comet. Popular astronomy, v. 18, Aug./Sept. 1910: 426–427. plate. QB1.P8, v. 18

Describes and reproduces photographs taken May 25, 29, and 30, and June 5 at Drake University, Des Moines, Iowa.

2119

Morehouse, Daniel W. Photographs of Halley's Comet. Popular astronomy, v. 18, June/July 1910: 370. plate. QB1.P8, v. 18

A note on photographs taken May 5 and 13, reproduced on the accompanying plate, which faces p. 369.

2120

Morell, Juliet. The comet. Waltz. New York, F. B. Haviland Pub. Co. [1910] 5 p. M32.M

For piano.

"Copyright 1910 by Juliette Madore."

Floral cover design.

The second page reproduces extracts from "three big song successes."

2121

Moreux, Théophile. La comète de Halley vue en France. L'Illustration, t. 135, 11 juin 1910: 529. illus. AP20.I3, v. 135

A drawing and two sketches by the author show the comet's appearance in the sky on the evening of May 31 and the appearance of the head on the same night through the telescope, at powers of 100x and 500x.

2122

Moreux, Théophile. Les comètes. *In his* Le ciel et l'univers. Paris, G. Doin, 1928. p. [299]–358. illus., port. QB44.M58

Halley's prediction: p. 312–314; the 1910 apparition of Halley's Comet: p. 327–328; the legend of the comet's excommunication in 1456: p. 331–334. Illustrations relating to Halley's Comet occur on p. 307, 308, 314, 317, 318, 332, 347, and 351.

2123

Moreux, Théophile. Le retour de la comète de Halley. Revue scientifique, 46. année, 28 nov. 1908: 688. Q2.R53, v. 46

2124

Morgan, Gene. His notion of nothing to see is a 3 A.M. comet in a fog. Chicago Sunday tribune, v. 69, May 15, 1910, pt. 9: 3. illus. N&CPR

A poem by this author entitled "When the Comet Comes to Town" appears on the same page.

2125

Moris, H. Le passage de la comète de Halley au Congo. Missions belges de la Compagnie de Jésus, 12. année, août 1910: 281–282. port.

Even in the village of Lula the inhabitants feared that death would ensue when the earth passed through the comet's tail. The portrait depicts the village chief.

2126
Morize, Henrique. Observations de la comète de Halley 1909 c. Astronomische Nachrichten, Bd. 186, Nr. 4443, 1. Okt. 1910: columns 33–36.
QB1.A77, v. 186

Observations made Jan. 4–June 5 at Rio de Janeiro.

2127
Morozov, Nikolai A. Chto mozhet prinesti nam vstrīēcha s kometoĭ? Po povodu priblizheniīā komety Galleīā. Publichnaīā lekt͡siīā. Moskva, Tip. T-va I. D. Sytina, 1910. 64 p. illus.

Held by the British Library under shelfmark 8563. e. 5. (1.).

2128
Morrell, G. F. Colliding with a comet's tail: a celestial spectacle which may be enacted next week between our earth and Halley's Comet. Graphic, v. 81, May 14, 1910: 696–697. illus. AP4.G7, v. 81

A double-page, captioned illustration showing the comet, the sun, Mercury, Venus, the earth, and the moon in perspective as if seen from 200,000 miles above the earth.

2129
Morrell, G. F. Where to look for Halley's Comet in the morning sky; a chance for the early riser. Graphic, v. 81, Apr. 30, 1910: 609. illus.
AP4.G7, v. 81

A full-page drawing with caption.

See also the earlier full-page drawing by this artist, "How One May Find Halley's Comet, a Famous Celestial Visitor Now Approaching the Earth After 75 Years' Absence," in v. 80, Oct. 2, 1909, p. 429. On p. 428 of that issue are reproduced three sketches of the comet made during its 1835 return.

2130
Morris, Charles S., *and* Daniel W. E. Green. The light curve of periodic comet Halley 1910 II. Astronomical journal, v. 87, June 1982: 918–923. illus.
QB1.A3, v. 87

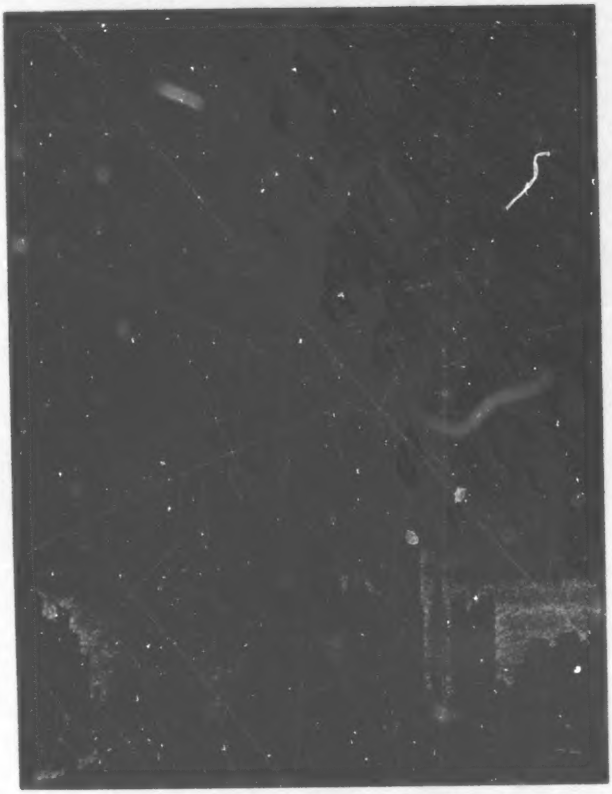
References (33): p. 923.

"Photometric parameters for periodic comet Halley 1910 II have been derived from 144 total visual magnitude estimates. The pre-perihelion data are best represented by an absolute magnitude of 5.47 and a power-law exponent of 4.44; post-perihelion results show that the absolute magnitude brightened to 4.94, and the exponent decreased to 3.07. Only small fluctuations in brightness about the power-law solutions are noted. Based on these results, a forecast of the visual brightness of periodic comet Halley's 1985–1987 apparition is presented."

2131
Morris, Charles S., *and* Daniel W. E. Green. A review and recalculation of Bobrovnikoff's photometric power-law solutions for P/comet Halley 1910 II. International comet quarterly, v. 3, Oct. 1981: 100–103. illus.
DN-Ob

References (4): p. 103.

"The photometric solutions for the 1909–10 observations of P/comet Halley have been recalculated using the individual observations given by



"Where To Look for Halley's Comet in the Morning Sky: a Chance for the Early Riser" was published in the *Graphic*, v. 81, Apr. 30, 1910, p. 609. The original caption reads: "Halley's Comet is now a naked-eye object, and by the aid of Mr. Morrell's drawing its exact position may easily be located for the next few mornings, owing to its proximity to the planet Venus, though after May 3 the moon will unfortunately be in the field of view and materially diminish the apparent brightness of the comet. It should be looked for due east between 3 and 4:30 A.M. On April 20 the comet made its nearest approach to the sun; on May 18 it is in conjunction with the sun, and the earth will probably pass through its tail. Thereafter, for a brief period, it will appear as an evening star before it fades from the sight of the present generation for ever."

The comet's path in the predawn heavens during the period April 29–May 14 is shown, with Venus and the constellation Pegasus as convenient skymarks. The viewpoint of the artist, G. F. Morrell, is from the east end of Victoria Street, leading into Broad Sanctuary and facing the west front of Westminster Abbey. The Clock Tower with Big Ben, St. Margaret's Church, and the Victoria Tower are seen further off. The column in the right foreground is a memorial to alumni of Westminster School who lost their lives in the Crimean War and the Indian Mutiny.

Bobrovnikoff (1941, 1942) and using a better ephemeris. The results obtained here are compared with Bobrovnikoff's solutions based upon normal places."

2132
Morrison, Richard J. Observations on Dr. Halley's great comet, which will appear in 1835; with a history of the phenomena attending its return for six hundred years past. Also, an elucidation of the cause of the comet's tail always pointing from the sun; and predictions of events which will be caused by the next appearance of this comet. 2d ed. London, Sherwood, 1835. 33 p.

Held by the British Library under shelfmark 8560. aa. 50. (3.).

A notice, copied from the *Falmouth Packet*, appears in *Niles' Weekly Register*, v. 48, Mar. 28, 1835, p. 64 (JK1.N5, v. 48).

2133
Moseley, Henry. History of the comet of 1835; the calculations of MM. Damoiseau and Pontécoulant; predicted time of the appearance and perihelion passage of the comet of 1835; actual time of the appearance and perihelion passage of the comet of 1835. *In his* Lectures on astronomy, delivered at King's College London. 4th ed., rev. London, J. W. Parker, MDCCCLIV. p. 220–226. QB51.M89 1854

2134
Motherwell, Robert M. Halley's Comet. *In* Canada. *Dept. of the Interior. Astronomical Branch*. Report of the Chief Astronomer for the year ending March 31, 1911. Ottawa, Printed for J. de L. Taché, Printer to the King's Most Excellent Majesty, 1915. ([Canada. Parliament] Sessional paper no. 25a, 1913) p. 300–302. plates. QB296.C22, 1911

Includes summary of observations made over the period Nov. 23, 1909–June 28, 1910. The plates reproduce seven photographs taken May 27, May 28, June 3, and June 4.

2135
Motherwell, Robert M. Halley's Comet. *In* Royal Astronomical Society of Canada. Journal, v. 4, Jan./Feb., May/June 1910: 54–55, 224–225. QB1.R485, v. 4

Plate 4, facing p. 1, was taken Feb. 10 by the author at the Dominion Observatory, Ottawa, and plates 8–12, preceding p. 173, reproduce a series of 15 photographs taken there May 3 – June 9. The May/June issue also presents, on plates 13–15, two photographs taken May 5 by Barnard at the Yerkes Observatory and one taken May 27 by F. L. Blake at the Meteorological Observatory, Toronto.

A few additional short notes concerning Halley's Comet as seen at the Dominion Observatory are reported by John S. Plaskett in the Mar./Apr. and July/Aug. 1910 issues, p. 143–144 and p. 300.

2136
Moulton, Forest R. Halley's Comet. *In his* An introduction to astronomy. New and rev. ed. New York, Macmillan Co., 1916. p. 332, 334–337. illus. QB43.M7 1916

Attributes Clairaut's predicted perihelion date to Halley.

2137
Mucke, Hermann. Helle Kometen: −86 bis +1950. Ephemeriden und Kurzbeschreibungen. Bright comets: −86 to +1950. Ephemerides and concise descriptions. Wien, Astronomisches Büro, 1972. 94 p. maps.
QB721.M8

Halley's Comet: p. 15–31, 33, 37, 43–44, 49, 59, 68–69, 85–87.

2138
Mucke, Hermann. Der Komet P/Halley. Seine Erscheinungen in der Vergangenheit sowie besonders jene von +1986 und +2061. Der Sternenbote, 23. Jahrg., 1980: 126–138.

2139
Müller, J. Observations of the Comet of Halley, made at the observatory of Geneva, in 1835 and 1836. *In* Royal Astronomical Society. Memoirs. v. 12. London, 1842. p. 385–407.
QB1.R5, v. 12

In French. A paper communicated on Jan. 14, 1842, by Alfred Gautier, accompanied by tabulated observations made Aug. 31, 1835–May 7, 1836. A brief report, in English, appears in the Society's *Monthly Notices*, v. 5, Jan. 1842, p. 129–130 (QB1.R7, v. 5).

2140
Ein Münchner Kindl. Fliegende Blätter, 132. Bd., Nro. 3371, [11. März 1910]: 124. illus.
AP105.F6, v. 132

Drawing shows a small crowd gathered at a telescope in the street; a man and his small son consider whether to spend 20 cents to see the comet enlarged 50 times, and the child suggests spending another 8 cents to buy a tankard of beer instead.

2141
Mulholland, Derral. Halley's Comet is back. McDonald Observatory news, v. 11, May 1983: 3.

In his column "Eye on the Sky."

Although Palomar won the "discovery sweepstakes" the comet was picked up less than three hours later by a French group on Mauna Kea and has since been located by astronomers in Arizona, Texas, and Chile.

2142
Mullens, E. T. Observations of Halley's Comet and Venus. Nature, May 19, 1910: 339.
Q1.N2, v. 83

Letter to the editor describing observations made Apr. 22 in Pietermaritzburg, Natal.

2143
Mumford, George S. Periodic comet Halley. Sky and telescope, v. 32, Aug. 1966: 71.
QB1.S536, v. 32

2144
Munckley, Nicolas. An account of the same comet [i.e., that seen in May 1759] *In* Royal Society of London. Philosophical transactions. v. 51, pt. 1; 1759. London, Printed for L. Davis and C. Reymers, Printers to the Royal Society, against Gray's-Inn Gate, in Holbourn, M.DCC.LX. p. 94–96.
Q41.L8, v. 51.1 Rare Bk. Coll.

The report, dated May 1, 1759, was read May 3; it is accompanied by a postscript dated May 6. Together they describe observations made at Hampstead or London on Apr. 30 and May 1, 2, 5, and 6.

2145

Muni, Ignazio Luigi. Saluto alla cometa di Halley, 12–13 maggio 1910. Versi. Nicosia, Unione tip., 1910. 7 p.

2146

Musson, W. Balfour. Halley's Comet. *in* Royal Astronomical Society of Canada. Journal, v. 4, Jan./Feb. 1910: 1–5. QB1.R485, v. 4

The first part of the annual address of the Society's retiring president.

2147

My ambition. New York times, v. 59, May 14, 1910: 8. N&CPR

Poem signed F. E. D. The writer wants to catch the comet's tail and fly through the sky.

2147a

My interview with Halley about his comet. Century path, v. 13, Feb. 27, 1910: 11. BP500.C4, v. 13

Signed "The Observer."

In an effort to locate the comet, the writer tries to question Halley's spirit through the agency of a medium.

2148

Mycho, André. La nuit de la comète. Le Rire, 21 mai 1910: [6]–[7] AP103.R4, 1910

A farce in two scenes. On the night of the earth's passage through the comet's tail, a young wife confesses to her husband that she has deceived him and receives his forgiveness. Next morning she tries to convince him that he has suffered a nightmare brought on by fear of the comet.

2149

NASA decision on U.S. Halley flyby research funding nears. Aviation week & space technology, v. 115, Sept. 28, 1981: 42–43. TL501.A8, v. 115

2150

NASA scuttles Halley's rendezvous. Comet news service, Oct. 3, 1977: 2. DN-Ob

2151

Naar de Komeet van Halley. Aarde & kosmos, 6. jaarg., juli 1979: 397. illus.

On the NASA/ESA joint mission.

2152

Naccari, Giuseppe. Le comete e la cometa di Halley. Ateneo veneto, anno 33, luglio/ag. 1910: 59–86. AS222.V14, v. 33

A lecture given at the Ateneo veneto on April 8 and 20, and at the Università popolare di Verona on May 17, 1910. A summary appears in *Rivista di astronomia e scienze affini*, anno 4, ag. 1910, p. 389–392 (QB1.S57, v. 4).

2153
Die nächste Rückkehr des Halleyschen Kometen. Sirius, 40. Bd., März 1907: 60–61. DN-Ob

2154
Nagarajan, G. Halley's Comet. Indian review, v. 11, Mar. 1910: 194–197. AP8.I4, v. 11

Facing p. 161 in the same issue is an illustration reproduced from *Nature*, v. 82, Jan. 13, 1910 (Q1.N2, v. 82), showing the comet's path, Jan. 5–Apr. 5.

2155
Nangle, James. [Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 21, Nov. 1910: 123–124. illus. QB1.B75, v. 21

Reports an observation made May 21 at Mosman, near Sydney, N.S.W. A sketch by the author appears in the Dec. 1910 issue, p. 165.

2156
Nankivell, Frank A. Watching the comet. Once every seventy-five years, the roof is mightier than the parlor. Puck, v. 67, May 11, 1910: [10] illus. AP101.P7, v. 67

Cartoon shows two scenes, one featuring a young couple "in the year 'thirty-five," and the other, part of a large city at night with many couples visible on the rooftops.

2157
Narin, Francis, *and* B. Rejzer. Sighting and trajectory analysis for periodic comets: 1975–1986. [Chicago] IIT Research Institute, 1965. 79 p. illus. (Report no. T-11) Sci RR

NASA accession no. N65–28347.

References (7): p. 10–11.

Analyzes "possible intercept missions to 55 apparitions of 36 well known short period comets." A mission to Halley's Comet is regarded as one of three in the "primary interest" category.

2158
La Nature des comètes et les observations de M. E. Marchand sur la comète de Halley. Ciel et terre, 33. année, sept. 1912: 316–317. QB1.C5, v. 33

Atmospheric effects ascribed to passage of the earth through the comet's tail.

2159
Nauchnyi͡a ekspedit͡sii dli͡a nabli͡udeniĭ pri prokhozhdeniĭ komety Gallei͡a. Meteorologicheskiĭ vi͡estnik, t. 20, maĭ/ii͡un' 1910: 179. DAS

Signed P. V.

On the expedition to Tenerife planned by Göttingen scientists.

2160
Naughton, William. "Hang the comet!" London opinion, v. 25, June 11, 1910: 393. illus.

Cartoon on cover of issue. A couple seated on a grassy bank, confronted with a cloudy sky, have put aside spyglass, binoculars, and chart, and are focusing their attention on each other.

2161
Naukeurig voorberigt van den schrikkelyken comeet, dewelke zig waarschynelyk binnen korten zal vertonen. Met een onderzoek, of dezelve de aarde hevig schokken of in de brand steken zal. 6. druk. Te Leeuwarden, Gedrukt by A. Ferwerda, 1756. 70 p. fold. col. plate.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 365.

2162
Naulty, Edwin F. The transit of Halley's Comet. The possible but improbable danger to the earth at the focal point of the sunlight. Collier's, v. 45, May 14, 1910: 46. AP2.C65, v. 45

See also diagram and caption on p. 17 of this issue.

Naulty believed that a comet's tail consisted of nothing more than sunlight, concentrated and brought to a focus by the comet's head, which acted as a gigantic lens. He thus predicted fiery destruction for any part of the earth's surface that might, on May 18–19, be swept past the focal point produced by Halley's Comet. For a more extensive statement of his views, see item 425a.

2163
Nausea, Friedrich, *Bp*. Quid & quibus portenderit cometes qui hoc anno post Christum natum M. D. XXXI. calendas. XIX. Septemb. Moguntiae & alias primo visus, & euidenter ab omnibus est notatus. *In his* Libri mirabilium septem. Coloniae, Apud P. Quentell, Anno M. D. XXXII. fol. LXVII–LXVIII. CtY; IU; MH; NIC; NN; ODaStL; PU

First published in Mainz in 1531 in the author's *Ad Sacratissimvm Caesarem Ferdinandvm ... Friderici Navseae ... Super Huius Anni Post Christum Natum M.D.XXXI. & Quolibet Alio Cometa Exploratio*, a copy of which is ascribed to Harvard. An English translation by Abraham Fleming of this work, *Of All Blasing Starrs in Generall* (London, Imprinted for T. Woodcocke, 1577. [80] p. STC 18413. Micro 040 Reel 325), includes the cited chapter, entitled "Of a Certeine Blasing Star Which Appeared in the Yeare of Our Lord, a Thousande Fiue Hundred Thirtie One, the Ninteenth of Septemb. at Mentz, a Citie in Germanie, and Was Sensibly Seene Likewise in Other Places," on p. [70]–[75].

2164
Nazarchuk, G. K. Poisk komety Gallei͡a na 6-m teleskope. *In* Kiev. Universytet. *Astronomichna observatorii͡a*. Kometnyĭ t͡sirkuli͡ar, no. 291, 3 sent. 1982: 3–4. DN-Ob

On unsuccessful searches made in Jan. and Mar. 1982.

2165
Negro, Carlo. Sulla cometa di Halley e sulle comete in genere. *In* Pontificia accademia delle scienze, *Rome*. Atti della Pontificia accademia romana dei nuovi Lincei. t. 64; 1910/11. Roma, 1911. p. 122–131. AS222.R7, v. 64

2166
Neill, G. A. Sextant observations of Halley's Comet made on board s.s. "Clan Urquhart." *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 620–621. QB1.R7, v. 70

A series of observations made Apr. 27–May 13 while voyaging westward through the Indian Ocean and the Red Sea.

2167
Němeček, Václav. Komety. Kometa Halleyova. V Hodoníně, Zemská vyšší česká reálka, 1910. 15 p. (XVI. roční zpráva Zemské vyšší české reálky v Hodoníně za školní rok 1909/10)

2168
[Ness, Christopher] A true account of this present blasing-star. Presenting itself to the view of the world. This August 1682. With sundry considerable remarks and observations thereupon. London, 1682. broadside.

Held by the British Library under shelfmark 1801. d. 1. (29.).

This author also referred to the 1682 comet in two works of judicial astrology: *An Astrological and Theologigal* [sic] *Discourse Upon This Present Great Conjunction ... Ushered in by a Great Comet* (London, Printed for L. Curtis, 1682. 44 p. MH), and *A Strange and Wonderful Trinity; or, A Triplicity of Stupendous Prodigies, Consisting of a Wonderful Eclipse, as Well as of a Wonderful Comet, and of a Wonderful Conjunction, now in its Second Return* (London, Printed for L. Curtiss, 1683. 44 p. CLU-C; CtY; DFo).

2169
Neubauer, Fritz M. The Giotto magnetometer experiment. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP-169) p. 9–15. illus.

NASA accession no. N82–14110.

References (21): p. 15.

"The Giotto magnetometer experiment will provide triaxial measurements of the magnetic vector field during and before the Halley encounter in March 1986."

2170
Neugebauer, Marcia. Concept strategy and experiments for the Halley flyby/Tempel 2 rendezvous mission. *In* Workshop on Cometary Missions, *Bamberg, 1979*. Cometary missions; proceedings. [Edited by] W. I. Axford, H. Fechtig, J. Rahe. Bamberg, 1979. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 132) p. 15–25. illus. DN-Ob

2171
Neugebauer, Marcia, *and* Ray L. Newburn. The exploration of comets. Technology review, v. 80, Mar/Apr. 1978: 47–53. illus.
T171.M47, v. 80

Includes discussion of proposals for rendezvous and flyby missions to Halley's Comet that have been under consideration by NASA.

2172
[Neuĭmin, Grigoriĭ N.] Kometa Gallei͡a. *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg*. Izvi͡estii͡a, vyp. 16, dek. 1910–i͡anv. 1911: 257, 295.
QB1.R9, v. 16

Brief notes reporting observations of the departing comet made at various foreign observatories.

2173
A New orbit for Halley's. Comet news service, July 5, 1977: 1, 4. illus.
DN-Ob

On Dr. Yeomans' work. The illustration depicts the sky as twilight ends on Jan. 12, 1986; "the moon, Jupiter, and Halley's Comet make a striking configuration . . ."

2174
New planet may be added to sun's family of nine. Science news letter, v. 41, June 6, 1942: 361. Q1.S76, v. 41

"... the attraction of such a body would account for the three days' delay in the return of Halley's comet in 1910, according to the calculations of Dr. R. S. Richardson of Mt. Wilson Observatory reported in the *Publications* of the Astronomical Society of the Pacific (February)."

See also "Our Sun's Dark Secret Child," by Robert D. Potter, in *Science Digest*, v. 12, Nov. 1942, p. 41–42 (Q1.S383, v. 12), condensed from its original publication in the *American Weekly*, Aug. 2, 1942.

2175
Newall, Hugh F. Halley's Comet. Times (London), Oct. 25, 1909: 6.
N&CPR

Letter to the editor announcing what the writer believed to be the first visual sighting by a European observer. He saw the comet on Oct. 21 with the 25-inch refractor of the Cambridge Observatory. The letter is reprinted in the *English Mechanic and World of Science*, v. 90, Oct. 29, 1909, p. 301 (T1.E5, v. 90), and summarized in *Nature*, v. 81, Oct. 28, 1909, p. 529 (Q1.N2, v. 81).

2176
Newbold, Raymond S. The great Halley Comet will soon blaze forth. Our times, v. 26, Apr. 7, 1910: 8–11. illus. AP201.O9, v. 26

2177
Newbold, Raymond S. How to find the Halley Comet. Our times, v. 26, Feb. 17, 1910: 8–9. illus. AP201.O9, v. 26

2178
Newburn, Ray L., *and* Rüdeger Reinhard. The derivation of Halley parameters from observations. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP–174) p. 19–24. illus.

NASA accession no. N82–23097.

References (23): p. 22–23.

"A set of nominal value model parameters for the nucleus, the dust and gas for P/Halley at 0.9 AU post-perihelion is derived from the light curve and spectra of Halley and by modelling the effect of the nongravitational forces . . . Clearly, the derived values have large uncertainties . . ."

2179
Newburn, Ray L., *and* Rüdeger Reinhard. The derivation of Halley parameters from observations. *In* Recent researches into solid bodies and

magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 151–155.
QB723.H2R4 1983

References (20): p. 155.

"The derived parameters include nucleus mass, size, density, albedo, rotation period, axial inclination, and surface temperature, the composition of the parent molecules, the total gas and dust production rates, distributions for the dust size and bulk density as well as various other parameters."

2180

Newburn, Ray L., *and* Donald K. Yeomans. Halley's Comet. *In* Annual review of earth and planetary sciences. v. 10; 1982. Palo Alto, Calif., Annual Reviews. p. 297–326. QE1.A674, v. 10

References (90): p. 324–326.

Contents: Introduction. –Periodic Comet Halley moves through history.—Comet Halley's motion and nongravitational forces.—Meteor showers associated with P/Halley.—Physical properties of P/Halley.—The coming apparition of Comet Halley.

2181

Newburn, Ray L., *and* Donald K. Yeomans. The International Halley Watch. *In* American Astronomical Society. Bulletin, v. 13, no. 3, 1981: 699. QB1.A255, v. 13

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 13–16, 1981, at Pittsburgh, Pennsylvania.

2182

Newburn, Ray L. Modelling the neutral gas environment of comets with special application to P/Halley. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 111–120. illus.
QB723.H2R4 1983

References (43): p. 120.

"A technique has been developed which allows relatively accurate modelling of cometary gas production from nothing more than a visible light curve. Application to P/Halley suggests the production rate of parent molecules will be about 2.6×10^{29} per second on March 10, 1986, for example. The uncertainties and intrinsic limitations in this approach are outlined. The theory is then extended to predictions of abundance of other gaseous species, and a photometric model of these gases provided. Combined with the dust model of N. Divine, preliminary predictions of the luminance of P/Halley as seen in any direction from inside the coma or outside can be provided for λλ3000–7000."

—— ——— Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1982. 22 p. illus. (Cometary Science Team preprint series, no. 28)

References (43): p. 15–17.

2183

Newburn, Ray L. Physical models of Comet Halley based upon qualitative data from the 1910 apparition. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 35–50. illus.

NASA accession no. N80–22205.

References (25): p. 40.

2184

Newburn, Ray L. A semi-empirical photometric theory of cometary gas and dust production: application to P/Halley's gas production rates. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP–174) p. 3–18. illus.

NASA accession no. N82–23096.

References (42): p. 17–18.

The theory, "completely recalibrated using ultraviolet observations from 14 comets and new, uniform visual photometry from eight comets ... is applied to P/Halley, using a new light curve without the artifact caused by the close approach to Earth in 1910. Gas production rates are predicted for the 1985–86 apparition."

—— ——— Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. 18 p. illus. (Cometary Science Team preprint series, no. 20)

References (42): p. 8–9.

2185

Newburn, Ray L. Status of the International Halley Watch. *In* American Astronomical Society. Bulletin, v. 14, no. 3, 1982: 754. QB1.A255, v. 14

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 19–22, 1982, in Boulder, Colorado.

2186

Newcomb, Simon. Halley's Comet. *In his* Popular astronomy. New York, Harper, 1878. p. 375–378. illus. QB44.N5 1878

2187

Newton, *Sir* Isaac. [Cometa anni 1682] *In his* Philosophiae naturalis principia mathematica. Ed. ultima auctior et emendatior. Amstaelodami, Sumptibus Societatis, MDCCXIV. p. 479–480.

QA803.A2 1714 Rare Bk. Coll.

A table comparing Flamsteed's observations with the comet's positions as computed according to Newton's theory appears on p. 479. On the following page, comparing the comets of 1607 and 1682, Newton states, "Si cometae hi duo fuerint unus & idem, revolvetur hic cometa spatio annorum 75 ..." This may be the source of the expectation that the comet would return in 1757, rather than in 1758 or 1759, as predicted by Halley.

—— [Comet of the year 1682] *In his* The mathematical principles of natural philosophy. Translated into English [by Andrew Motte] v. 2. London. Printed for B. Motte, at the Middle-Temple-Gate, in Fleetstreet, MDCCXXIX. p. 381–382, 384.

QA803.A45 1729, v. 2 Rare Bk. Coll.

In this translation, made from the third Latin edition (1726), the table appears on p. 382, and the comparison of the comets of 1607 and 1682, on p. 384.

2188
Newton, *Sir* Isaac. [Observations of the comet of 1682] A manuscript by Newton. *In his* The correspondence of Isaac Newton. v. 2. 1676–1687. Edited by H. W. Turnbull. Cambridge, Published for the Royal Society at the University Press, 1960. p. 380–381. illus.
QC16.N7A4, v. 2

"From the original in private possession." Notes appear on p. 381. Observations were made Aug. 19, 20, 21, and 22. Includes a sketch.

2189
The Next return of Halley's Comet. Nature, v. 11, Feb. 11, 1875: 286–287.
Q1.N2, v. 11

Based on the findings published by Pontécoulant in 1864.

2190
Ney, Edward P. Visibility of comet nuclei. Science, v. 215, Jan. 22, 1982: 397–398.
Q1.N35, v. 215

References (13): p. 398.

"Comparison of the visual brightness of the well-observed comets with that of Halley in 1910 leads to the conclusion that the nucleus of Halley can be imaged without significant obscuration by the dust."

2191
Nicolai, Friedrich B. G. Schreiben des Herrn Hofraths Nicolai an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 289, 294, 297, 307, 17. Oct., 5. Dec. 1835, 28. Jan., 27. Apr. 1836: columns 3–4, 89–94, 141–144, 309–310.
QB1.A77, v. 13

Reports observations at Mannheim, Aug. 28–Nov. 15, 1835, and Jan. 17, 1836. This observer's earlier, unsuccessful efforts to locate the comet are briefly recorded in 12. Bd., Nr. 276–277, 21. März–29. Apr. 1835, columns 200 and 215.

2192
Nicolai, Friedrich B. G. Zwei Schreiben des Herrn Hofraths Nicolai an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 298, 6. Jan. 1836: columns 151–154.
QB1.A77, v. 13

Discusses observations made Nov. 15 and Oct. 22.

2193
Nicoll, W. E. [Halley's Comet] English mechanic and world of science, v. 91, June 3, 1910: 400.
T1.E5, v. 91

Letter to the editor describing naked-eye observations made May 21–23, 27, and 29 at Scarborough.

2194
Niedner, Malcolm B., *and* John C. Brandt. Interplanetary gas. XXIII. Tail disconnection events in comets: evidence for magnetic field line reconnec-

tion at interplanetary sector boundaries? Astrophysical journal, v. 223, July 15, 1978: 655–670. illus. QB1.A9, v. 223

References (75): p. 670.

"Attention is focused on a form of cometary activity which has been known for some time but is poorly understood: the discarding of a plasma tail by a comet. We find a link between plasma tail rejections and conditions in the solar wind. A model is presented in which a disconnected tail is the end result of magnetic field line reconnection in the cometary ionosphere caused by the traversal of a magnetic sector boundary. Observations of plasma tails appear to be the best and only method at present of mapping the interplanetary sector structure out of the ecliptic plane."

Includes discussion of disconnection events that occurred in Halley's Comet on May 13 and June 6, 1910.

2195

Niedner, Malcolm B. A space mission to a comet. Comet news service, Dec. 29, 1977: 1–3. illus. DN-Ob

On plans for a rendezvous mission to Halley's Comet and what scientists might learn from such a venture.

2196

Niedner, Malcolm B., Jürgen Rahe, *and* John C. Brandt. A worldwide photographic network for wide-field observations of Halley's Comet in 1985–1986. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982*. Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 227–242. illus.

References (18): p. 242.

2197

Nielsen, Ole. The comet. March & two step. Arr. by Ed. Holl. Chicago, Universal Music House, 1910. 11 parts. M1350.N

For orchestra.

2198

Nijland, Albert A., *and* Jan van der Bilt. Beobachtungen des Halleyschen Kometen 1909 c am Utrechter Refraktor. Astronomische Nachrichten, Bd. 183, Nr. 4379, 21. Dez. 1909: columns 173–176. QB1.A77, v. 183

Observations made Nov. 8–21.

2199

Nijland, Albert A., *and* Jan van der Bilt. Beobachtungen von Kometen am Utrechter Refraktor. Astronomische Nachrichten, Bd. 186, Nr. 4453, 5. Nov. 1910: columns 195–202. QB1.A77, v. 186

Includes observations of Halley's Comet made Dec. 3, 1909–May 27, 1910.

2200

Nijland, Albert A. De helderheid en de staartlengte van de komeet van Halley. Hemel en dampkring, 9. jaarg., mei 1911: 6–8. QB1.N43, v. 9

Estimates of magnitude and tail length made by various observers during late April, May, and early June 1910 are presented in tabular form.

2201

Nijland, Albert A. De koma der komeet van Halley. Hemel en dampkring, 8. jaarg., juli 1910: 33–36. plate. QB1.N43, v. 8

Describes observations of the coma made during the period Apr. 29–May 27. Magnitude estimates for the period Apr. 21–June 6 are also given. The plate reproduces sketches of the coma made Apr. 29 and May 3, 6, 12, 23, and 26.

2202

Nijland, Albert A. De komeet van Halley. Hemel en dampkring, 7. jaarg., oct.–dec. 1909, feb.–maart 1910: 90–91, 110, 125, 149, 162, 183–184; 8. jaarg., mei 1910, apr. 1911: 7–9, 188. QB1.N43, v. 7–8

Mostly news notes and Nijland's own magnitude estimates.

2203

Nijland, Albert A. Waarnemingen betreffende de komeet van Halley. Hemel en dampkring, 8. jaarg., oct. 1910, jan. 1911: 88–90, 134. QB1.N43, v. 8

A collection of data sent chiefly by observers on shipboard. Most of these observers estimated tail length, but some also provide estimates of tail breadth and position angle and magnitude of the comet's head (nucleus and surrounding coma). A correction appears in 9. jaarg., mei 1911, p. 8.

2204

Nijland, Albert A. Waarnemingen betreffende den staart der komeet van Halley. Hemel en dampkring, 8. jaarg., juli 1910: 36–37. QB1.N43, v. 8

Presents a list of 14 estimates of the length of the comet's tail reported by two ship's officers who made observations during the period May 1–June 9. Nijland also tells of a photograph taken May 26 by W. van der Elst, which with a 20-minute exposure recorded a tail about 10° long.

2205

Nippoldt, Alfred. Magnetische Beobachtungen in Seddin während des Kometendurchgangs, 19. Mai, 1910. Terrestrial magnetism and atmospheric electricity, v. 15, Sept. 1910: 162. QC811.J6, v. 15

2206

Nobile, Vittorio, *and* Eugenio Guerrieri. Osservazioni della cometa di Halley 1909 c. Astronomische Nachrichten, Bd. 184, Nr. 4406, 22. Apr. 1910: columns 239–240. QB1.A77, v. 184

Made at Naples, Jan. 7–16.

2207

Nodon, Albert. Perturbations magnétiques et électriques du 18–19 mai. Ciel et terre, 31. année, juil. 1910: 289. QB1.C5, v. 31

2208

Nørlund, Niels E. Den Halley'ske komet. Fysisk tidsskrift, 9. aarg., 1./2. heft, 1910: 13–22. QC1.F9, v. 9

2209

Nomura, Tamiya, Tomonao Hayashi, Haruto Hirasawa, Keiken Ninomiya, *and* Mitsuru Ichikawa. Deep space projects in Japan. *In* AIAA/NASA

Symposium on Space Tracking and Data Systems, *Arlington, Va., 1981.* Space tracking and data systems; proceedings. New York, American Institute of Aeronautics and Astronautics, 1981. p. 223–225. illus.
TL4030.A35 1981

2210
Nordenmark, Nils V. E. Halleys komet, 12 f. Kr.–1910 e. Kr. Stockholm, Fröleen, 1910. 40 p. illus.
Held by the British Library under shelfmark 8561. k. 22. (6.).

2211
Nordmann, Charles. Sur l'éclat de la comète de Halley et la composition de sa lumière. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 150, 27 juin 1910: 1732–1734. Q46.A14, v. 150

2212
Norling, Gunnar. The date for the construction of the first temple of Jerusalem and its probable connection with an appearance of Halley's Comet. *In* International Congress on the History of Science, *7th, Jerusalem, 1953.* Actes. Paris, Académie internationale d'histoire des sciences [1956?] (Collection des travaux de l'Académie internationale d'histoire des sciences, no 8) p. 458–460. Q101.I65, 7th
A summary by Derek Justin Schove, entitled "The Comet of David and Halley's Comet," appears in the *Journal* of the British Astronomical Association, v. 65, July 1955, p. 289–290 (QB1.B75, v. 65).

2213
Norman, Colin. No long encounter with Halley's Comet. Nature, v. 269, Sept. 22, 1977: 280. Q1.N2, v. 269
"The National Aeronautics and Space Administration (NASA) has reluctantly abandoned an ambitious and expensive plan to conduct a close-range study of Halley's Comet as it swings around the sun in 1986."

2214
Norris, Ray P. Proposed radio observations of inverted OH in Halley's Comet. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 81–82.
References (6): p. 82.

2215
Nos ancêtres regardant la comète de Halley. L'Illustration, t. 135, 7 mai 1910: 428. illus. AP20.I3, v. 135
Illustrations show the Bayeux Tapestry panels (1066) and a painting by David Teniers the Younger (1682). The canvas, which measures 42 × 36 cm, belonged to a collector in Lille and was sold in 1909 at the Hôtel Druot in Paris.

2216
Notes on Halley's Comet. Interesting facts about our celestial visitor. Scientific American supplement, v. 69, Feb. 12, 1910: 107–108. illus.
T1.S52, v. 69

Includes some material adapted from the Feb. 1910 issue of *Popular Astronomy* and reproduces Rudaux's drawing of the orbits of the earth and the comet during May.

2217

Notes on Halley's Comet; ephemeris of Halley's Comet, computed at Goodsell Observatory. Scientific American, v. 102, Feb. 12, 1910: 143.
T1.S5, v. 102

Ephemeris covers the period Feb. 3–Mar. 31.

2218

Notes on the comet. London literary gazette, Oct. 17, 1835: 666.
AP4.L42, 1835

Reports on the comet's recent course, which differs from the various predictions.

2219

Notice historique et astronomique, sur la comète de 1835. [Paris] Impr. de Chassaignon [1835] broadside ([2] p.) illus.

Held by the Bibliothèque de l'Arsenal at Paris under shelfmark Est. 224, 76.

The cut shows people on a platform looking at an enormous comet; some are using telescopes or spyglasses. On the verso is "Chanson sur la comète de 1835," by Neveux.

The recto is reproduced as planche 23 in Jean-Pierre Seguin's *Canards du siècle passé* (Paris, P. Horay [1969] PN5184.C35S4).

2220

Notice sur la comète de Halley, et son retour en 1835. Par F. B. Lyon, Impr. de Boursy, 1835. 12 p.

2221

Notices of the appearance of the comet. Mechanics' magazine, v. 23, Aug. 29, 1835: 430.
T1.I38, v. 23

Brief reports of sightings in Rome, Kensington, and Hayes Rectory, Kent, derived from the *Allgemeine Zeitung* and the *Times*.

2222

Noticias: el cometa de Halley. *In* Sociedad Astronómica de Barcelona. Boletín, año 1, oct. 1910: 55–56; año 2, enero 1911: 132–133.
QB1.S54, v. 1–2

Also appearing in the enero 1911 issue (p. 131) is a short note, "Fotografías del cometa de Halley," reporting a gift to the society of photographs taken by Mascart at Tenerife.

2223

Notizie astronomiche: la cometa di Halley. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 4, genn., apr.–giugno 1910: 41–43, 186–187, 188, 236, 287.
QB1.S57, v. 4

Various brief reports and notices. The April issue also contains a folded chart, "Cammino percorso apparentemente in cielo dalla cometa di Halley dal 12 settembre 1909 al 21 maggio 1910."

2224

Le Nouveau projet franco-soviétique Vénus-Halley. COSPAR information bulletin, no. 91, Aug. 1981: 35–36. TL787.C2, 1981

"Extract from 'La Lettre du CNES' No. 74 of 2 March 1981."

2225

Nouveaux éléments de la comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, sept. 1910: 407. illus. QB1.S6, v. 24

The elements are those calculated by Crawford and Meyer. On p. 406 is a chart prepared by Quénisset showing the comet's path in the heavens for the entire period between Oct. 1, 1909, and Aug. 1, 1910.

2226

Novus cometa, à 16. Augusti, st. vet. Anni 1682 Lipsiae videri coeptus. Acta eruditorum, Sept. 1682: 295–296.

Gives information on observations made Aug. 16–30.

2227

Les Noyaux multiples de la comète de Halley. Cosmos, t. 63, 16. juil. 1910: 57.

Comments on observations made by Baillaud and Boinot, Innes, and Comas Solá.

2228

[Nürnberger, Joseph C. E.] [Der Halley'sche Komet] Jenaische allgemeine Literatur-Zeitung, 32. Jahrg., Num. 135, Juli 1835: columns 114–120. Z1007.J42, 1835

Reviews pamphlets by Günther, Hecht, and Möbius.

2229

Nürnberger, Joseph C. E. Kometographie. Literatur-Blatt, 23.–27. März 1835: 124–126. AP30.M6, 1835

Describes the expected appearance and path of Halley's Comet during the latter part of 1835 and the beginning of 1836, in connection with a notice of two short works, *Die wahre und die scheinbare Bahn des Halley'schen Kometen bei seiner Wiederkunft im Jahre 1835*, by A. F. Möbius, and *Beyträge zu einer Monographie des Halley'schen Kometen*, by K. L. Littrow. An unsigned review of J. W. Fischer's *Neue Erfahrungen und Ansichten über die Cometen* follows on p. 127–128.

2230

Nürnberger, Joseph C. E. Natur- und gewerbwissenschaftliche Berichte. Morgenblatt für gebildete Stände, 4.–6. Juli, 18.–19. Sept., 22.–23. Dec. 1835: 633–634, 638–639, 893–895, 898–900, 1217–1218, 1222–1223; 25. Apr., 16. Juni 1836: 393–394, 573–574. AP30.M6, 1835–36

The cited installments of this frequently appearing feature are partly or entirely devoted to Halley's Comet, its anticipated return, reports of observations, and theories concerning its motion and mass loss. For additional comments on its 1835 return, see the author's articles, "Die Himmelsbegebenheiten des Jahrs 1835" in the issues of 9. and 11. Feb. 1835, p. 133 and 143, and "Die Himmelsbegebenheiten des Jahrs 1836" in the issue of 24. Feb. 1836, p. 184–185.

2231
Nyíry, István. A' Halley-üstökös' eloszolhatása. Tudománytár, 2. év, 2. szám, 1835: 250–268. AS142.M25, 1835

Misled by the report (later shown to be false) citing a letter from Herschel at the Cape to Littrow in Vienna and purporting to state that the comet would not after all be visible, Nyíry speculates on the possible causes of its disappearance. A note at the end of his essay reports on Dr. Lardner's lectures of April 10 and May 1 at the Royal Institution in London.

2232
OMB kills Halley/Tempel 2 mission. Aviation week & space technology, v. 111, Nov. 26, 1979: 20. TL501.A8, 111

2233
Observaciones: el cometa de Halley. *In* Sociedad Astronómica de Barcelona. Boletín, año 1, jul.–oct. 1910: 10–14, 29–30, 52–53. illus. QB1.S54, v. 1

The second note communicates a report from L. G. León in Mexico, and the third calls attention to a sharp drop in barometric pressure recorded May 17–19, 1910.

2234
Observando el cometa Halley con un telescopio callejero. Es fama que mirando por ese telescopio, se veía al cometa mover la cola. Caras y caretas, año 13, 11 de junio de 1910: [83] illus. AP63.C27, 1910

Reproduces a photograph taken at night, showing 60–70 men posed as for a group portrait; the telescope is in the middle.

2235
Observation du retour de la cométe de 1682. *In* France. *Bureau des longitudes.* Connaissance des temps pour l'année bissextile 1760. au méridien de Paris, publiée par l'ordre de l'Académie royale des sciences, et calculée par M. de la Lande. A Paris, De l'Impr. royale, M. DCCLIX. p. 212.

2236
Observations de la comète de Halley et de Jupiter à Ténériffe. La Nature, 38. année, 7 mai 1910, suppl.: 178. illus. Q2.N2, v. 38.1

On Mascart's expedition. The sketch of the head of the comet, made Apr. 13, shows irregular luminous areas.

2237
Observations de la comète de Halley faites à l'observatoire de Lyon. Astronomische Nachrichten, Bd. 190, Nr. 4537, 18. Nov. 1911: columns 7–12. QB1.A77, v. 190

Observations made Dec. 30, 1909–June 20, 1910, by J. Guillaume at the Brünner equatorial, and Mar. 1–June 20, 1910, by M. Luizet at the coudé equatorial (0.32 m).

2238
Observations diverses de la comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, avril 1910: 192–193. QB1.S6, v. 24

Includes reports of photographs taken by Wolf at Heidelberg and by Raurich and Calvet at Barcelona; data on the comet compiled by Eugène Joyeux, and a note by Flammarion on possible atmospheric effects of the earth's passage through the comet's tail.

2239
Observations of Halley's Comet. Nature, v. 83, May 26–June 2, 1910: 384–387, 409–410. illus. Q1.N2, v. 83

Presents reports from Dr. Íñiguez in Madrid (with a photograph taken May 11 and spectrograms taken a few days earlier) and C. Leach at Malta (with a drawing made May 14); a discussion of observations made during the comet's transit and the earth's passage through the tail; and an extensive summary of reports of spectrum observations. An ephemeris for May 30–June 3, from *Astronomische Nachrichten*, Nr. 4411, ends the first article. The second includes reports from Prof. George Forbes, who observed the comet at sea (en route to Savona), May 15–20; G. W. Grabham, at Khartoum, and C. Leach. There are summaries of articles by Borrelly and Esclangon in *Comptes rendus* for May 17 and by Eginitis, André, Claude, and others in the May 25 issue, a diagram showing the comet's path for May 29–July 16, and an ephemeris for June 2–July 16 from *Astronomische Nachrichten*, Nr. 4411.

2240
Observations of Halley's Comet. Observatory, v. 33, July 1910: 297–298. QB1.O2, v. 33

Reports from R. N. Lyne on the P.&O. steamer *Caledonia*, J. C. Clancey in Rangoon, J. F. Tennant, near Dehra Dun, and Prof. Banachiewicz, in Warsaw. A note from Tennant providing the coordinates of his location appears in the Sept. 1910 issue, p. 372.

2241
Observations of Halley's Comet. *In* Royal Astronomical Society. Memoirs. v. 9. London, J. Weale, 1836. p. 269–271. QB1.R5, v. 9

Observations made Oct. 29 at South Kilworth by the Rev. Dr. William Pearson; Oct. 10 and 11 at Blackheath by John, 2d Baron Wrottesley; and Oct. 13–21 at sea by Capt. Robert Owen, R.N., and officers of H.M.S. *Thunder*. The observations submitted by Capt. Owen are briefly mentioned and described in the Society's *Monthly Notices*, v. 3, Jan. 1836, p. 142 (QB1.R7, v. 3).

2242
Observations of Halley's Comet and possible effect on the wireless telegraph and the compass. Pacific marine review, v. 7, May 1910: 15. VK1.P2, v. 7

A request for wireless operators to note anything out of the ordinary, and for unusual deflections of the compass needle to be recorded, during May 16–20; for watch officers to log the occurrence of meteors; and for shipmasters who view the comet to inform the Hydrographic Office of its brightness and the form, color, and angular length of the tail.

This announcement also appears in the weekly issues of the *Hydrographic Bulletin*, no. 1076–1082, Apr. 13–May 25, 1910.

A German version, requesting German captains to send observations to the Deutsche Seewarte, appears under the title "Der Halleysche Komet, seine Wirkung auf die drahtlose Telegraphie und auf den Kompass" in *Hansa*, 47. Jahrg., 23. Apr. 1910, p. 433 (Micro 06912).

2243

Öpik, Ernst J. Comet Halley. Irish astronomical journal, v. 13, Mar./June 1977: 56. QB1.I753, v. 13

A note on Yeomans' study of the comet's orbital motion (see item 3140) and on a lecture he gave at Armagh Planetarium about NASA plans for a rendezvous mission via solar sail.

2244

Öpik, Ernst J. The motion of the condensation in the tail of Halley's Comet, June 5–8, 1910. Zeitschrift für Astrophysik, 58. Bd., 3. Heft, 1964: 192–201. illus. QB1.Z4, v. 58

References (10): p. 201.

Originally a paper, "Die Bewegung der Schweifverdichtung des Halleyschen Kometen vom 5. bis 8. Juni 1910," presented on Sept. 26, 1963, at a meeting of the Astronomische Gesellschaft in Frankfurt am Main. An abstract appears in the society's *Mitteilungen* for 1963, p. 126 (QB1.A66, 1963).

2245

Öpik, Ernst J. Photometry, dimensions, and ablation rate of comets. Irish astronomical journal, v. 6, Sept. 1963: 93–112. QB1.I753, v. 6

References (17): p. 112.

Contents: 1. Traditional concepts and artificial comets.—2. Distribution of light in coma; dissociation and ionization mystery; the false nucleus.—3. Effect of geocentric distance and telescope aperture.—4. Absolute magnitudes.—5. Radius and mass of nucleus, mass of coma and loss of mass.

Halley's Comet is one of several treated as examples.

2246

Öpik, Ernst J. The stray bodies in the solar system. pt. 1. Survival of cometary nuclei and the asteroids. *In* Advances in astronomy and astrophysics. Edited by Zdeněk Kopal. v. 2. New York, Academic Press, 1963. p. 219–262. QB1.A1717, v. 2

A paper presented at the Comet Symposium of the American Astronomical Society, Nantucket, June 20, 1961.

References (25): p. 261–262.

"Probabilities and lifetimes for collision and ultimate orbital change are calculated for selected objects, or groups of objects, crossing the orbits of the principal planets." Table V, "Dynamical Probabilities of Elimination for Selected Objects in Crossings With Jupiter" (p. 232), includes figures for Comet Halley and its associated meteor streams.

2247

Offering indignity to a terror of the ages: "snapping" the comet which William the Conqueror used as an omen. Illustrated London News, v. 135, Oct. 16, 1909: 551. illus. AP4.I3, v. 135

Full-page drawing shows an observer photographing the comet with the 30-inch reflector at Greenwich. Insets show details of the photographic apparatus, the view through the guiding telescope, the way light rays move through a reflector, and Wolf's discovery photograph.

2248
Ofterdinger, Ludwig F. Ueber Kometen, deren Bahnen, Grösse, physische Beschaffenheit und Bestimmung. Mit besonderer Rücksicht auf die Kometen, welche in den nächsten Zeiten wieder sichtbar werden. Populär dargestellt. Stuttgart, C. Schweizerbart's Verlagshandlung, 1835. 129 p. fold. plates.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 170.

"Der Halley'sche Komet": p. 80–84. Table I (p. 123) provides "Elemente des Halley'schen Kometen zur Zeit seiner verschiedenen Erscheinungen," and Table VIII (p. 128–129), "Ephemeride des Halley'schen Kometen vom. 3. Aug. 1835 bis 11. Febr. 1836."

2249
Ogura, S. Observations of small planets and Halley's Comet made with the 16.2 cm refractor (ring micrometer) at the Tokyo Astronomical Observatory. Astronomische Nachrichten, Bd. 184, Nr. 4412/4413, 19. Mai 1910: columns 343–346. QB1.A77, v. 184

Includes observations of the comet made Dec. 3–18.

2250
O'Halloran, Rose. Observations of Halley's Comet. Popular astronomy, v. 18, Oct. 1910: 453–456. plate. QB1.P8, v. 18

See also this author's brief note, "Halley's Comet," in the Mar. 1910 issue, p. 183. The plate reproduces the famous photograph of the comet and Venus taken May 13 at the Lowell Observatory.

2251
Ohdem, Pieter H. Berigt van de comeet van het jaar 1759. in Batavia waargenomen. *In* Hollandsche maatschappij der wetenschappen, *Haarlem*. 6. deels 1. stuk. Te Haarlem, By J. Bosch, 1761. p. 421–435. Q57.H2, v. 6.1

2252
O'Keefe, John. The new goat. World (New York), v. 50, May 4, 1910: 8. N&CPR

Poem on the practice of blaming every mishap on the comet.

Another poem by this author, "A Voice in the Night," describing scenes in a neighborhood where people are up late to look for the comet, appears in the *World* of May 18, p. 8.

2253
Die Oktober-Sternschnuppen und der Halleysche Komet. Sirius, 58. Bd., März 1925: 56–57. DN-Ob

On the Orionid shower.

2254
Okulich, Leopol'd V. Observations de la comète de Halley en 1909–1910 avec l'équatorial de 15 p. *In* Pulkovo. Glavnaia͡ astronomicheskaia͡ obser-

vatoriiâ. Izviestiiâ. t. 4; 1910/12. S.-Peterburg, Tip. Imperatorskoĭ Akademii Nauk, 1912. p. 25–27. QB4.P982, v. 4

2255

Olbers, Wilhelm. Auszug aus einem Schreiben des Herrn Dr. Olbers an den Herausgeber. Bremen 1835. Sept. 7. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 317–320. QB1.A77, v. 12

Reprinted in *Wilhelm Olbers, sein Leben und seine Werke*, 1. Bd., p. 451–452 (Berlin, J. Springer, 1894. QB3.O43, v. 1).

On the date of perihelion and changes in the comet's brightness.

2256

Olbers, Wilhelm. Briefwechsel zwischen W. Olbers und F. W. Bessel. Hrsg. von Adolph Erman. 2. Bd. Leipzig, Avenarius & Mendelssohn, 1852. 442 p. CU; DN-Ob; CtY; MiU; OkU

Observations of Halley's Comet are discussed in three letters: No. 352, Bessel to Olbers, dated Königsberg, 25. Oct. 1835, on p. 400–404; No. 353, Olbers to Bessel, dated Bremen, 16. Nov. 1835, on p. 404–408; and No. 354, Bessel to Olbers, dated Königsberg, 30. Dec. 1835, on p. 408–413.

2257

Olbers, Wilhelm. Einige Bemerkungen über den berühmten Halleyschen Kometen. *In* Astronomisches Jahrbuch. 53. Bd.; 1828. Berlin, Bey dem Verfasser und in Commission bey F. Dümmler, 1825. p. 144–150. QB8.G4, 1828

Reprinted in *Wilhelm Olbers, sein Leben und seine Werke*, 1 Bd., p. 439–444 (Berlin, J. Springer, 1894. QB3.O43, v. 1).

Gives details of Palitzsch's recovery of the comet in 1758 and Cassini's observations in 1682.

2258

Olbers, Wilhelm. Noch etwas über die nächste Wieder-Erscheinung des Halleyschen Cometen. Astronomische Nachrichten, 12. Bd., Nr. 268, 22. Nov. 1834: columns 57–64. QB1.A77, v. 12

Reprinted in *Wilhelm Olbers, sein Leben und seine Werke*, 1. Bd., p. 444–451 (Berlin, J. Springer, 1894. QB3.O43, v. 1).

An English translation by Thomas Galloway, "On the Approaching Return of Halley's Comet," appears in the *London and Edinburgh Philosophical Magazine and Journal of Science*, 3d ser., v. 6, Jan. 1835, p. 45–52, and in *The Year Book, an Astronomical and Philosophical Annual*, by Marshall Conant, pt. 2, p. 11–18 (Boston, Munroe & Francis, 1836. AC901.M5, v. 939 Rare Bk. Coll.). An abridgment can be found in the *Monthly Notices* of the Royal Astronomical Society, v. 3, Dec. 1834, p. 68–71 (QB1.R7, v. 3).

A French translation, "Sur la prochaine apparition de la comète de Halley," appears in *Bibliothèque universelle des sciences, belles-lettres et arts; sciences et arts*, t. 57, nov. 1834, p. 327–338 (Q2.A77, v. 57). To it are appended, on p. 338–340, extracts from Arago's essay, "Sur la comète qui doit passer au périhélie en novembre 1835," published in the Bureau des longitudes' *Annuaire pour l'an 1835* (QB9.F8, 1835).

2259
Olbers, Wilhelm. Schreiben des Herrn Dr. Olbers an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 289, 17. Oct. 1835: columns 7–10. QB1.A77, v. 13

Reprinted in *Wilhelm Olbers, sein Leben und seine Werke*, 1. Bd., p. 452 (Berlin, J. Springer, 1894. QB3.O43, v. 1).

Noting in a letter dated Sept. 21 that the comet's tail has not yet been observed, he refers to Messier's 1759 observations in predicting that it is unlikely to be visible until Obtober.

2260
Olivier, Charles P. The η Aquarid meteors. Astronomical journal, v. 27, Sept. 24, 1912: 129–130. QB1.A3, v. 27

An analysis of observations made during 1910–12 confirms the author's earlier conclusion that this meteor stream is connected with Halley's Comet. See also his note, "The Aquarid Meteors," in the *Publications* of the Astronomical Society of the Pacific, v. 22, June 1910, p. 141–142 (QB1.A4, v. 22), and the section entitled "The Aquarid Meteors of May" on p. 9–11 of his *175 Parabolic Orbits and Other Results Deduced From Over 6,200 Meteors* (Philadelphia, American Philosophical Society, 1911. Transactions of the American Philosophical Society, new ser., v. 22, pt. 1. Q11.P6, n.s., v. 22).

2261
Olivier, Charles P. Halley's Comet. *In his* Comets. Baltimore, Williams & Wilkins Co., 1930. p. 94–126. QB721.O5

2262
Olivier, Charles P. The Halley's Comet meteors and the Pons-Winnecke's Comet meteors. *In his* Meteors. Baltimore, Williams & Wilkins Co., 1925. p. 74–81. plate. QB741.O4

2263
Olivier, Charles P. Physical ephemeris of Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 22, Feb. 1910: 34–35. QB1.A4, v. 22

Table I gives position angle of the comet's tail and the angle at the comet between the earth and the sun for Jan. 5–Apr. 5; Table II gives the position angle of the tail and the difference in right ascension of the sun and the comet for Apr. 4–May 30.

2264
Olmsted, Denison, *and* Elias Loomis. Halley's Comet. Army and Navy chronicle, v. 1, Sept. 10–17, 1835: 295, 302. U1.A6, v. 1

The earlier note, dated Sept. 1 and copied from the *New Haven Herald*, announces that the writers first saw the comet on the morning of Aug. 31 "in the field of Clark's great telescope." The second, dated Sept. 4, reports subsequent observations and comments on the accuracy of the predicted path.

2265
Olmsted, Denison. [Halley's Comet] *In his* Letters on astronomy, in which the elements of the science are familialry [sic] explained in connection with

Biographical sketches of the most eminent astronomers. Rev. ed. New York, Harper [1853?] p. 321–339. QB43.O53 1853b

First published in Boston in 1840. London editions are entitled *The Mechanism of the Heavens* and include additional illustrations, some in color.

2266
Olson, Roberta J. M. Giotto's portrait of Halley's Comet. Scientific American, v. 240, May 1979: 160–163, 165–168, 170. illus. (part col.)
T1.S5, v. 240

The author believes that Giotto's portrayal of the star of Bethlehem as a realistic comet in one of the Arena Chapel frescoes in Padua is based on the appearance of Halley's Comet in 1301. She also calls attention to a sketch in the Eadwine Psalter as a stylized representation of the comet at its return in 1145.

A letter from Samuel F. Howard, Jr., asking whether Justinian's comet of 531 might have been an appearance of Halley's, and Olson's reply appear in v. 241, Dec. 1979, p. 13–14. A letter from Donald K. Yeomans, clarifying some statements made by Olson, appears in v. 242, Mar. 1980, p. 8, 10.

Olson's article and its accompanying illustrations are reprinted in *Comets; Readings From Scientific American*, p. [1]–9 (San Francisco, W. H. Freeman [1981] QB721.C65).

2267
On the appearance of the comet in America. Gentleman's magazine, v. 29, May 1759: 229. AP4.G3, v. 29 Rare Bk. Coll.

Poem. According to *A Calendar of American Poetry in the Colonial Newspapers and Magazines and in the Major English Magazines Through 1765* (Worcester, American Antiquarian Society, 1972. xxxi, 353 p. Z1231.P7L44 1972), by Joseph A. Leo Lemay, it was first published in the *New York Mercury* of Apr. 16, 1759, and was reprinted in four other newspapers and periodicals. See also item 2421.

Published also in the *Scots Magazine*, v. 21, May 1759, p. 254 (AP3.S35, v. 21).

2268
On the comet in the year 1680. As also on the blazing star, now seen, this present month of August 1682. London, 1682.

Cited in the 1860 Pulkovo catalog, p. 775.

2269
On the return of the expected comet. Gentleman's magazine, v. 28, Nov. 1758: 526–527. AP4.G3, v. 28 Rare Bk. Coll.

Unsigned letter dated Nov. 15.

2270
On to Halley's? Europe, si, America, maybe. Comet news service, July 31, 1980: 4. DN-Ob

2271
One of those who thought they saw the comet. London opinion, v. 25, June 4, 1910: 380. illus.

Cartoon. An old man with a spyglass, looking out the window, drops his cigar in surprise, but what he perceives as the comet is actually the tail of a frightened cat, briefly glimpsed as the animal jumps down from a wall.

O'Neill, Herbert C. The coming comet. Windsor magazine, v. 31, Jan. 1910: 231–235. illus. AP4.W7, v. 31

2273
O'Neill, Herbert C. Return of Halley's Comet. Outlook (London), v. 25, Apr. 30, 1910 621–622. AP4.O8, v. 25

2274
Oppenheim, Samuel Zur bevorstehenden Wiederkehr des Halleyschen Kometen. Geschichte und Theorie desselben. *In* Wissenschaftlicher Klub, *Vienna*. Monatsblätter, 31. Jahrg. 31. Jan. 1910: 27–31. AS142.V41, v. 31

Presented at the Dec. 30, 1909, meeting of the society.

A somewhat abridged version entitled "Zur bevorstehenden Wiederkehr des Halleyschen Kometen," a talk given in Prague at the Jan. 10, 1910, meeting of the Deutscher naturwissenschaftlich-medizinischer Verein für Böhmen "Lotos," appears in *Lotos*, Bd. 58, März 1910, p. 77–82 (Q44.L4, v. 58).

2275
Oppenheimer, Michael, *and* Leonie Haimson. The comet syndrome. Natural history, v. 89, Dec. 1980: 54–61. illus. QH1.N13, v. 89

"Additional reading": p. 74–75.

"Human reactions to encounters of the cometary kind range from hysteria to frivolity." About half of the article concerns Halley's Comet.

2276
Orlov, Aleksandr I͡A. O dvizhenīi materīi v khvosti͡e komety Gallei͡a 6 i 7 ii͡uni͡a 1910 goda. *In* Tartu. Ülikool. *Tähetorn*. Publikationen der Kaiserlichen Universitäts-Sternwarte zu Jurjew (Dorpat). Bd. 21, Heft 4. Dorpat, Druck von. C. Mattiesen, 1911. p. [43]–45.

Reprinted in his *Izbrannye trudy*, t. 2, p. 85–86 (Kiev, Izd-vo Akademii nauk Ukrainskoĭ SSR, 1961. QB3.O7, v. 2).

2277
Orlov, Sergeĭ V. L'éclat du noyau de la comète de Halley 1909 c. Astronomische Nachrichten, Bd. 191, Nr. 4584, 21. Juni 1912: columns 441–444. illus. QB1.A77, v. 191

2278
Orlov, Sergeĭ V. I͡Arkost' komet i dei͡atel'nost' na poverkhnosti soln͡tsa. Astronomicheskiĭ zhurnal, t. 33, maĭ/ii͡un' 1956: 377–381. illus. QB1.A47, v. 33

References (4): p. 381.

"The sharp variations found in the relative Wolf numbers, (from 0 to 100) with four maxima and minima, during the epoch in which observations of the brightness of the nucleus of Halley's comet were made by

Campbell, establish the validity of M. S. [sic] Lomonosov's suggestion on the connection between the luminosity of comets and the aurorae. When the corrections for the velocity of corpuscular streams were applied a still better confirmation of this dependence was obtained. No relation between the brightness of the head [of] a comet and Wolf numbers was found."

2279
Orlov, Sergeĭ V. K voprosu o vychislenīi massy kometnykh i͡ader po ikh i͡arkosti. *In* Akademii͡a nauk SSSR. Izvi͡estīi͡a Imperatorskoĭ Akademīi nauk, 6. ser., t. 7, 15 marta 1913: 257–262. AS262.A624, s. 6, v. 7
Bibliographic footnotes.
A summary by Heber D. Curtis, "The Mass of the Nucleus of Halley's Comet," appears in the *Publications* of the Astronomical Society of the Pacific, v. 25, June 1913, p. 175–177 (QB1.A4, v. 25); this is reduced to a single paragraph in *Popular Astronomy*, v. 21, Aug./Sept. 1913, p. 452 (QB1.P8, v. 21).

2280
Orlov, Sergeĭ V. Khvost komety Gallei͡a (1910 II). Astronomicheskiĭ zhurnal, t. 5, vyp. 2/3, 1928: 170–172. QB1.A47, v. 5
Abstract in English.

2281
Orlov, Sergeĭ V. O prirode komet. Moskva, Izd-vo Akademii nauk SSSR, 1960. 190 p. illus., ports. QB732.O68 1960
Bibliography: p. [189]
"Istorii͡a komety Gallei͡a": p. 33–[50]
"I͡Adro komety Gallei͡a": p. 101–105.

2282
Orlov, Sergeĭ V. Opredelenie ottalkivatel'nykh sil solntsa. Kometa Gallei͡a (1910 II). Russkiĭ astronomicheskiĭ zhurnal, t. 2, vyp. 3, 1925: 4–21. QB1.A47, v. 2
Abstract in English.

2283
Orlovius, Volker. Wann erfolgt der nächste Periheldurchgang des Halley'schen Kometen? *In* Vereinigung der Sternfreunde. Nachrichtenblatt, 13. Jahrg., Aug./Sept. 1964: 121–123. QB1.V39a, v. 13
References (4): p. 123.

2284
Ostrander, William F. Queries to Halley's Comet. Every where, v. 25, Dec. 1909: 224. AP2.E94, v. 25
Poem.

2285
O'Toole, Thomas. Comet's return figures to be most-watched event ever. Washington post, Dec. 28, 1982: A-3. illus. N&CPR

2286
O'Toole, Thomas. Halley's Comet returns in '86, but U.S. won't be up there to watch. Washington post, Dec. 11, 1980: A-24. N&CPR

2287
O'Toole, Thomas. … not to mention Halley's Comet. Washington post magazine, May 24, 1981: 8–14. illus. (part col.) N&CPR

"The myth, mystery and magnificence of Mr. Halley's cosmic gimcrack." A photograph of Comet West (1976) appears on the cover of the issue.

A somewhat abridged revision, entitled "Hailey's Comet: Coming Soon to a Solar System Near You," appears, with different illustrations, in *Extra* (inflight magazine of Continental Airlines), v. 3, Sept. 1981, p. 44–45, 47, 74–75.

2288
O'Toole, Thomas. U.S. may send robot spacecraft for sample of Halley's Comet. Washington post, Aug. 15, 1981: A-3. port. N&CPR

The portrait is of NASA chief James M. Beggs.

2289
Ottewell, Guy. Halley's [Comet] *In his* The astronomical companion. [Greenville, S.C., Dept. of Physics, Furman University, 1979] p. 43.
QB43.O86

2290
Ottewell, Guy. Halley's Comet. *In his* Astronomical calendar. 1983. [Greenville, S.C., Dept. of Physics, Furman University, 1982] p. 56–57. illus.

2291
Ottewell, Guy. P/Halley. *In his* Astronomical calendar. 1982. [Greenville, S.C., Dept. of Physics, Furman University, 1981] p. 50. illus.

2292
Our visitor the comet. New York American, May 8, 1910, American magazine section: 6–7. illus. N&CPR

Contents: Emerson, Edwin. Why comets have caused death, insanity, murder, riots, war and pestilence and how superstitious fear of them lingers among men.—Serviss, Garrett P. Why Halley's Comet cannot strike the earth, although *some* comet will certainly hit us *some* time—and what will happen then.—Rice, David E. Why psychology watches the comet.—Why it incessantly loses its tail.

2293
Over de komeet van Halley en de vroegere meeningen omtrent de beteekenis der kometen. Vragen van den dag, 25. jaarg., feb. 1910: 141–151. illus.

2294
Overbye, Dennis. Great balls of fire. Discover, v. 2, Dec. 1981: 20–24, 26. illus. (part col.), col. port. Q1.D57, v. 2

"Halley's comet is coming back, and scientists, seeking clues to the origin of the solar system, are burning with anticipation." The portrait is of Dr. Fred Whipple.

2295

Owen, O. J. [Halley's Comet] English mechanic and world of science, v. 91, May 20, June 3, 1910: 356, 399–400. illus. T1.E5, v. 91

Letters to the editor describe and accompany sketches of the comet as seen at Abergavenny on the morning of May 9 and at 10 p.m. May 27.

2296

Pachymeres, Georgius. De apparente in caelo ab occasu cometa. *In his* Ἀνδρονικος Παλαιολογος. Andronicus Palaeologus; sive, Historia rerum ab Andronico seniore in imperio gestarum usque ad annum ejus aetatis undequinquagesimum. Venetiis, Ex typographia B. Javarina, M. DCC. XXIX. p. 185. DF635.P2

Greek and Latin. On the 1301 appearance of Halley's Comet. Includes a poem; Pingré gives a French (prose) translation in his *Cométographie*, t. 1, p. 420–421 (QB721.P65, v. 1).

2297

Packer, David E. Comet Halley: was its periodicity known to the ancients? English mechanic and world of science, v. 77, July 24, 1903: 522. T1.E5, v. 77

2298

Padova, Eugenio. Osservazioni fotometriche sulla cometa di Halley fatte al R. Osservatorio astronomico di Padova. *In* Società astronomica italiana. Rivista di astronomia e scienze affini, anno 4, ott. 1910: 491–497. QB1.S57, v. 4

2299

Paine, Robert T. Encke's and Halley's Comets. *In* The American almanac and repository of useful knowledge, for the year 1835. Boston, C. Bowen [1834] p. 13–17. map. AY64.A5, 1835

A page of text, chiefly about Halley's Comet, is followed by Woolhouse's ephemeris, three sets of orbital elements, and a map with three paths for the comet, all copied from the 1835 *Nautical Almanac* (London, J. Murray, 1833).

2300

Palafrugell, L. de. El cometa Halley: no haya temor. Puerto Rico ilustrado, año 1, marzo 6 de 1910: [19]–[20] illus. AP63.P8, v. 1

2301

Palermo. Università. *Osservatorio.* Due comete osservate negli anni 1830 e 1835 nel Reale osservatorio di Palermo. *In its* Giornale astronomico e meteorologico, v. 1, n. 15/16, 1855: column 223. QB4.P15, v. 1

Presents data from nine observations made Sept. 21–Oct. 1 by Luigi Martina.

2302
Palisa, Johann. Zur Wiederkehr des Halleyschen Kometen. Sirius, 43. Bd., Apr. 1910: 73–81. DN-Ob

Wide-ranging discussion of the comet, its history, motion, and physical characteristics, and the many questions still to be answered.

2303
Palmer, Charles M. Halley's Comet observed. Popular astronomy, v. 18, Feb. 1910: 118. illus. QB1.P8, v. 18

Describes a sighting made Nov. 30 at Butte, Mont.

2304
Paoletti, Rodolfo. La cometa di Halley. Il senatore Celoria osserva la cometa dall'osservatorio astronomico di Brera. L'Illustrazione italiana, anno 37, 22 magg. 1910: 507. illus. AP37.I4, v. 37

The full-page drawing shows Celoria at the eyepiece of the telescope aimed at the comet which can be seen in the starry heavens.

2305
The Papal bull against a comet. Notes and queries, 9th ser., v. 2, Dec. 10, 24, 1898: 477–478, 517; v. 3, Feb. 25, Mar. 11, Apr. 29, 1899: 153, 197, 334–335. AG305.N7, s. 9, v. 2–3

The question is raised by James D. Butler, who asks for the text of the papal pronouncement. Responses are from W. T. Lynn, T. P. Armstrong, Hartwell D. Grissell and Edward H. Marshall, and St. Clair Baddeley.

See also related correspondences, "The Pope's Bull," 4th ser., v. 4, Nov. 20, Dec. 18, 1869, p. 437, p. 543–544 (from William Pengelly), and v. 5, Feb. 19, 1870, p. 213 (from Charles Vivian); and "Cursing a Comet at Constantinople," 7th ser., v. 1, May 15, June 12, 1886, p. 388, p. 471–472 (from W. T. Lynn).

2306
Papp, Desiderio. Halley's Comet—poison gas from space? *In his* Creation's doom. New York, D. Appleton-Century Co., 1934. p. 191–201. illus. QB991.P3 1934a

Translated by H. J. Stenning from the German original, *Zukunft und Ende der Welt*.

2307
Papp, János. Látogatás a Halley-n? Föld és ég, 9. évf., 1974. aug.: 122. Q4.F64, v. 9

About NASA plans for probes to comets and minor planets. A German translation by Miklós Vlahosz, entitled "'Besuch' auf Komet Halley?" appears in *Astronomie und Raumfahrt*, Heft 3, 1975, p. 94 (QB1.A55, 1975).

2308
Paprotny, Zbigniew. Sondy do komety Halleya. Urania (Kraków), r. 52, grudz. 1981: 367–368. QB1.U7, v. 52

On the various space missions being planned.

A similar article by this author, entitled "Wyścig do komety Halley'a," appears in *Astronautyka*, r. 25, nr. 3, 1982, p. 22–23 (TL780.A8, v. 25).

Giovanni Celoria, director of the Brera (Milan) observatory, views the comet through one of its telescopes. Nearly twenty years earlier, Celoria had studied the records of comet observations left by the 15th-century scientist Toscanelli and found them so accurate that he could calculate the orbits of the comets observed, thereby confirming the identity of the one seen in the summer of 1456 as Halley's Comet. Rodolfo Paoletti, who made this drawing, was a genre painter working in Milan. From *L'Illustrazione italiana*, anno 37, 22 magg. 1910, p. 507.

2309
Paracelsus. Vsslegung des Commeten erschynen im hochbirg, zu mitlem Augsten, Anno 1531. [Zürich, Wehrli, 1531] 8 leaves. illus.

The text is reproduced in Karl Sudhoff's edition of the *Sämtliche Werke*, Abt. 1, 9. Bd., p. [371]–393 (München-Planegg, O. W. Barth Verlag, 1925. B785.P2 1922, Abt. 1, v. 9). The same volume also contains short treatises on earthquakes in Germany that followed the appearance of the comet (p. [395]–402) and a rainbow that indicated the end of disorders which the comet had presaged (p. [403]–410), as well as a fragment entitled "Ausarbeitungen und Entwürfe zu den beiden Kometenschriften von 1531 und 1532" (p. [421]–426).

A brief description of the 1531 *Vsslegung*, with short extracts, is included in Rudolf Wolf's "Ueber die älteste Cometen-Litteratur der Schweiz," in *Mittheilungen* der Naturforschenden Gesellschaft in Bern aus dem Jahre 1849, Nr. 156/157, p. 102–105 (Q67.B5, 1849).

2310
Parise, Lidia, *and* Abel González. "La fin del mundo." [Buenos Aires] Centro Editor de América Latina [1972, ©1971] 113 p. illus., plates, ports. (La Historia popular, 67) F3001.3.P37 1972

Includes bibliographic references.

Describes the hysteria that afflicted much of the population of Buenos Aires during the approach of Halley's Comet in early 1910.

2311
Parker, Lee W., *and* E. G. Holeman. Electrostatic charging and sheath structure of the Halley probe due to impact-generated plasmas. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP-155) p. 67–80. illus.

NASA accession no. N81-34118.

References (4): p. 75.

2312
Parrilla, Justo P. El cometa de Halley. Cuba y América, v. 31, mayo 1910: 37–40. illus. AP63.C8, v. 31

2313
Pasachoff, Jay M., *and* Marc L. Kutner. Halley's Comet. *In their* University astronomy. Philadelphia, W. B. Saunders Co., 1978. (Saunders golden sunburst series) p. 523–524. illus., port QB43.2.P36

Relevant illustrations continue on p. 525–527. Among them are diagrams of the comet's path in the heavens during the period Oct. 1974–May 25, 1986, and a painting showing its orbit through the inner solar system. A slightly abridged text, accompanied by all but one of the illustrations, appears in Pasachoff's *Contemporary Astronomy*, p. 405–408 (Philadelphia, W. B. Saunders Co., 1977. QB45.P29) and in his *Astronomy Now*, p. 277–280 (Philadelphia, W. B. Saunders Co., 1978. QB45.P289).

2314
Pascoli, Giovanni. Alla cometa di Halley. *In his* Odi e inni, MDCCCXCVI–MCMXI. 5. ed. Bologna, N. Zanichelli, 1920. (*His* Poesie, 5) p. [87]–91. PQ4835.A3A17, v. 5

Dated Jan. 1910.

2315
Pashin, K. A. Dnevnik nabli͡udeniĭ nad kometoĭ Galle͡ia s 14-go apre͡lia i po 14 i͡iuni͡a 1910 goda. P͡iatigorsk, 1912. 46 p.

According to Polak (item 2401), these observations were made at Essentuki.

2316
Pask, T. P. To Halley's Comet. South African railway magazine, v. 4, June 1910: 291. TF1.S7, v. 4

Poem. On the same page is reproduced a photograph of the comet taken by Mr. H. Leigh at Durban, in an unguided exposure of 15 minutes.

2317
The Passage of Halley's Comet, May 18. Popular astronomy, v. 18, June/July 1910: 370. QB1.P8, v. 18

2318
The Passing of Halley's Comet. Christian herald, v. 33, June 1, 1910: 519. illus. BR1.C63, v. 33

Photographs depict a "comet party" on a New York hotel roof and the large model of the comet's path exhibited at the Museum of Natural History.

2319
The Passing of the comet. Our times, v. 26, May 26, 1910: 3. AP201.O9, v. 26

2320
Pastorff, C. J. G. Notiz über die Wiedererscheinung des Halleyschen Kometen, vom Particulier C. J. Pastorff zu Buchholz bei Drossen. Astronomische Nachrichten, 13. Bd., Nr. 289, 17. Oct. 1835: columns 5–6. QB1.A77, v. 13

Briefly notes observations made Aug. 29–30 and Sept. 3.

2321
The Path of Halley's Comet, showing how the "tramp of the sky" takes a parabolic path through the solar system. Rock Island employes' magazine, v. 3, May 1910: 744–745. illus. TF1.R85, v. 3

A diagram shows the orbits of the earth and Venus and the comet's path during the period Feb. 23–May 30. There is also an ephemeris for May 6–30 and a table indicating the amount of time by which (a) the comet's appearance precedes sunrise, Apr. 4–May 16, and (b) its setting follows sunset, May 20–30.

2322
Pattillo, Will. A "tale" of Halley's Comet. Japan weekly mail, v. 53, May 28, 1910: 817. AP8.J5, v. 53

Describes the fears of the local population, thousands of whom "fully expected to be crushed into atoms by a collision with the Comet or be suffocated by its gases." The author attempted to relieve the distress by giving a public lecture to explain that no harm would come to the earth from its encounter with the comet's tail.

2323

Payn, Howard. The tail of Halley's Comet on May 18–19. Nature, v. 83, June 23, 1910: 487. Q1.N2, v. 83

Letter to the editor describing observations made aboard a steamer enroute from Palermo to Naples.

2324

Pearson, John F. Sailing with Halley's Comet—and other space spectaculars for the 1980s. Popular mechanics, v. 147, Feb. 1977: 67–71. illus. (part col.) T1.P77, v. 147

"The Jet Propulsion Lab's imaginative package includes a space sail that needs no fuel, a radar mapper to see through the clouds of Venus and rovers to explore Mars."

2325

Pearson, William. Extract of a letter from Dr. Pearson to Francis Baily, Esq., containing an observation of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 3, Nov. 1835: 130–131. QB1.R7, v. 3

Made Oct. 29 at South Kilworth, Northants. The observational data only appear also in the Society's *Memoirs*, v. 9, p. 269 (QB1.R5, v. 9).

2326

Pechüle, Carl F. Planeten- und Kometenbeobachtungen angestellt mit dem 360 mm Refraktor der Kopenhagener Sternwarte. Astronomische Nachrichten, Bd. 187, Nr. 4475, 18. Feb. 1911: columns 161–172. QB1.A77, v. 187

Includes observations of Halley's Comet made Feb. 8–June 7, 1910.

2327

Peck, W. J. The time table of Halley's Comet honored. Christian work and the evangelist, v. 88, May 28, 1910: 719. BR1.C64, v. 88

2328

Pecl. Petr. O pohybu, podstatě a vzniku komet. Kometa Halleyova. Praha, A. Hynek [1910] 128 p. (Pestrá knihovna zábavy a kultury, čís. 22/23)

2329

Pecorella, Louis. Halley's Comet waltz. Sedalia, Mo., A. W. Perry & Sons' Music Co. [1910] [2] p. M32.P

For piano.

2330

Peltier, Leslie C. The comet year. *In his* Starlight nights; the adventures of a star-gazer. Illustrated by the author. New York, Harper & Row [1965] p. 13–18. illus. QB36.P4A3

Includes recollections of seeing both Comet 1910a and Halley's Comet in 1910. A drawing shows the entire family—parents and three children, with a dog—watching a comet on a wintry night.

2331
Peppler, Albert. Die wissenschaftlichen Ergebnisse der durch Halleys Komet veranlassten aerologischen Beobachtungen. Naturwissenschaftliche Wochenschrift, 27. Bd., 14. Jan. 1912: 23. Q3.N9, v. 27

Reports on the findings published by Tetens in the 1910 *Ergebnisse der Arbeiten* of the Aerologisches Observatorium in Lindenberg. Reprinted in *Meteorologische Zeitschrift*, 29. Jahrg., März 1912, p. 137 (QC851.M3, v. 29).

2332
Percival, Stanley E. Halley's Comet. English mechanic and world of science, v. 90, Jan. 7, 1910: 540. T1.E5, v. 90

Letter to the editor reporting an observation made at Merriott Vicarage, Somerset, on Dec. 31, and noting that it seemed fainter then than on Dec. 4–6.

2333
Pereira de Azambuja, José A. O cometa de Halley visto no céo de Goa em 1910. Succinta descripção d'este astro e breves referencias. Nova Goa, Impr. nacional, 1910. 34 p. illus. NN

2334
Pereotkrytie periodicheskoĭ komety Galleı͡a (1982i)!!! *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 296, 12 noi͡abr′ 1982: 1. DN-Ob

Announces the recovery of the comet as reported in Japan Astronomical Circular no. 352.

2335
Periodicheskai͡a kometa Galleĭ (1982i). *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 300, 28 i͡anv. 1983: 1–2. DN-Ob

Summarizes data from IAU Circular 3767.

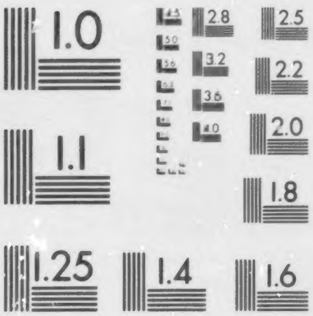
2336
Periodicheskai͡a kometa Galleı͡a. *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 294, 30 okt. 1982: 1. DN-Ob

Summarizes information published in IAU Circular 3683 and gives Yeomans' ephemeris for Oct. 1–Dec. 30, 1982.

2337
Periodicheskai͡a kometa Galleı͡a (1982i). *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 297, 1 dek. 1982: 1–2. illus. DN-Ob

More about the recovery from IAU Circular 3737. Quotes the IAU telegram and reproduces the recovery image.

PG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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

2338
Perlach, Andreas. Des Cometen unn ander erscheinung in den lüfften, im XXXI. Jahr gesehenn bedütung. [Wien, 1531] WU

2339
Perrine, Charles D. Observations of Halley's Comet, made with the 12-inch refractor of the Argentine National Observatory, Cordoba. Astronomical journal, v. 27, May 12, 1911: 14–16. QB1.A3, v. 27

Observations made Nov. 30, 1909–Aug. 22, 1910.

2340
Perrine, Charles D. The passing of the earth and the tail of Halley's Comet. Astrononiical journal, v. 26, Sept. 13, 1910: 145–146. QB1.A3, v. 26

Notes of observations made at Cordoba, Argentina, on the mornings of May 17, 18, 20, and 21.

2341
Perrine, Charles D. Photographs of Halley's Comet made at the Córdoba Observatory, Argentine Republic. *In* Royal Astronomical Society. Monthly notices, v. 71, Nov. 1910: 102–103. QB1.R7, v. 71

Extract from a letter. Extensive series of photographs were taken from mid-April through early August. "The comet was a magnificent spectacle, especially during the week before the transit. That great searchlight beam, extending away from the Sun for 120° to 130°, was a sight which cannot be forgotten."

2342
Perrine, Charles D. Résumé of observations of Halley's Comet at Córdoba [Argentina] *In* Astronomical Society of the Pacific. Publications, v. 22, Dec. 1910: 211–213. QB1.A4, v. 22

Position observations were made on a total of 117 nights, and spectrographic observations, on 40 nights. About 400 photographic negatives were obtained with various instruments.

2343
Pervinquière, Léon. La comète de Halley. Armée et marine, 12. année, 1 mai 1910: 128. U2.A7, v. 12

2344
Pervinquière, Léon. Passerons-nous dans la queue de la comète? La Vie illustrée, 13. année, 14 mai 1910: 111–112. AP20.V6, v. 13

2345
Pešek, Luděk. [Halley's Comet in the Mercurian night 'sky' in 1986] *In* Ryan, Peter. Solar system. Illustrated by Ludek Pesek. Diagrams by QED. New York, Viking Press [1978] p. [220]–[221] col. illus. QB501.2.R89 1979

2346
Peserico, Luigi, *engineer*. La stella dei Magi. *In his* Quanto visse Gesù. [Vicenza, Tip. pont. vesc. S. Giuseppe, 1920] p. [41]–79. MH-AH; PU

Bibliographic footnotes.

In arguing that Halley's Comet was the star of the Magi, the author also seeks to show that the comet and its periodic returns were known to the ancient Chaldeans and Syrians and that the comet also served, in an earlier appearance, to guide the Israelites out of Egypt during the first few nights of the Exodus.

2347

Petersen, Adolf C. Original-Beobachtungen des Halleyschen Cometen auf der Altonaer Sternwarte 1835. Astronomische Nachrichten, 18. Bd., Nr. 430, 5. Aug. 1841: columns 355–362. QB1.A77, v. 18

Observations were made with a ring micrometer on Aug. 24, 26, 28, 29, and 31 and Sept. 1.

2348

Peterson, Alfred V. Comet rag. A continuous "come-on." Salt Lake City, Utah, 1910. [4] p. M31.P

For piano.

2349

Petri, Winfried. Der Halleysche Komet im Alten Testament. Sterne und Weltraum, 3. Jahrg., Jan. 1964: 14–15. illus. QB1.S854, v. 3

On attempts to connect biblical passages suggestive of comets at the time of Abraham, King David, and the prophet Jeremiah with early appearances of Halley's Comet as calculated by Kamieński.

2350

Pfaff, Johann W. A. Andenken an den Halleyschen Kometen (von 1759). *In* Astronomisches Jahrbuch für das Jahr 1815. Berlin, 1812. p. 152–156. QB8.G4, 1815

2351

Phantasien über den Halleyschen Kometen. Natur, 1. Jahrg., 20. Feb. 1910, Beilage: I–II.

On Flammarion's frightening predictions, published in the *New York Herald*, of what could happen when the earth is engulfed by the comet's tail.

2352

Pharris, Jimmie L., *and* James R. Kern. The 1986 apparition of Halley's Comet. [Winston-Salem, N.C.? 1980] 18 leaves. illus.

References (19): leaf 18.

"Presented to the 77th annual meeting of the North Carolina Academy of Science, ECU, Greenville, N.C., April 11–12, 1980."

2353

Phenomena in sky: comet shares honors with eclipse of the moon. Taft observes wonders, accompanied by Mrs. Taft to the Naval Observatory. Washington post, May 24, 1910: 1. N&CPR

Also reports the dispatch of two telescopes, and assistants to attend them, from the Naval Observatory to the Capitol, for the use of Members of Congress, and tells about the recollections of Sen. Isaac Stephenson of Wisconsin, aged 80, who saw the comet in 1835.

2354
Philippine Islands. *Weather Bureau.* The return of Halley's Comet and popular apprehensions, by Rev. George M. Zwack, S.J., secretary of the Weather Bureau. Manila, Bureau of Print., 1910. 22 p. QB723.H2P6

At head of title: Department of the Interior, Weather Bureau, Manila Central Observatory.

A summary of the contents appears under the title "The Return of Halley's Comet" in the American Geographical Society's *Bulletin*, v. 42, Apr. 1910, p. 261–265 (G3.A5, v. 42).

2355
Philippot, Hector. La comète de Halley. Ciel et terre, 29. année, juil. 1908: 229–240. illus. QB1.C5, v. 29

2356
Phillips, Theodore E. R. Halley's Comet. *In* British Astronomical Association, *London.* Journal, v. 20, Dec. 1909: 155–156. QB1.B75, v. 20

Letter to the editor reporting observations made at Ashtead from the end of November through Dec. 28.

Read at a meeting of the Association on Dec. 29, 1909; comments made by members appear on p. 126–128 of the same issue.

2357
Phillips, Theodore E. R. [Halley's Comet] English mechanic and world of science, v. 90, Nov. 26, 1909: 401; v. 91, June 10, 1910: 424–425. T1.E5, v. 90–91

Letters to the editor. The first describes observations made Nov. 16, 21, and 22, at Ashtead, Kent, and the second, the appearance of the comet's tail on May 26, as well as a report "from a friend who saw the comet on the early morning of May 18, from [on] board ship in the Red Sea."

2358
Phillips, Theodore E. R. Note on variations in brightness of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 70, Dec. 1909: 183. QB1.R7, v. 70

2359
Phillips, Theodore E. R. Observations of Halley's Comet. *In* British Astronomical Association, *London.* Journal, v. 20, Mar., May–June 1910: 309–310, 426–427, 480–482. illus. QB1.B75, v. 20

Made at Ashtead, Dec. 24–Mar. 5, May 8–23, and May 26–June 14. The last article is accompanied by sketches of the comet's head as seen on May 22, 26, and 31.

2360
Phillips, Theodore E. R. Observations of Halley's Comet with a 12¼-in. reflector. *In* British Astronomical Association, *London.* Journal, v. 20, Nov. 1909: 94–95. QB1.B75, v. 20

Made at Ashtead, Nov. 16–23.

A paper read at a meeting of the Association on Nov. 24, 1909; comments made by members appear on p. 70–72 of the same issue.

2361
A Photograph of Halley's Comet. Popular science monthly, v. 75, Nov. 1909: 518–519. illus. AP2.P8, v. 75

Reproduces photographs taken Sept. 16 and 17 by Oliver J. Lee with the 2-foot reflector of the Yerkes Observatory.

2362
Photographies de la comète de Halley. La Nature, 38. année, 12 nov. 1910: 372–374. illus. Q2.N2, v. 38.2

Reproduces spectrograms taken by Slipher and a photograph also taken at the Lowell Observatory on May 13.

2363
Photographing the comet. Amateur photographer & photographic news, v. 51, Apr. 5, 1910: 340. TR1.A4, v. 51

2364
Photographische Aufnahme des Halleyschen Kometen am 31. Mai 1910. Sirius, 43. Bd., Sept. 1910: 210–211. plate. DN-Ob

The plate, facing p. 216, reproduces the photograph, taken by Karl Satori of Vienna.

2365
Photographische Beobachtungen des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 182, Nr. 4357–4358, 20.–24. Sept. 1909: columns 211–212, 227–228. QB1.A77, v. 182

Reports from Max Wolf of photographs taken Sept. 11 at the Astrophysikalischer Institut Königstuhl-Heidelberg; Sir W. H. M. Christie, Sept. 9, at the Royal Observatory, Greenwich; Harold Knox-Shaw, Sept. 13 and 15, at the Khedivial Observatory, Helwan; and Heber D. Curtis, Sept. 12–14, at the Lick Observatory (relayed by E. C. Pickering).

These notes were first published in a supplement to Nr. 4356 (17. Sept.).

2366
Picat, J. P., J. Guérin, Michel Combes, Eric Gérard, J. Lecacheux, *and* G. Lelièvre. An attempt at detecting Comet P/Halley at the 3.60 m C.F.H. Telescope in December 1981. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982*. Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 273–275.

References (7): p. 275.

2367
Pickering, Edward C. Brightness of Halley's Comet. [Cambridge, Mass., Published by the Observatory, 1910] 3 p. illus. (Harvard University. Observatory. Circular 157) QB4.H35, no. 157

Photometric measures by O. C. Wendell are compared with visual estimates by Leon Campbell. A German version by Kobold, "Helligkeitsmessungen des Halleyschen Kometen," with a table of comparison stars derived from Harvard Circular 156, appears in *Astronomische Nachrichten*, Bd. 185, Nr. 4433, 11. Aug. 1910, columns 267–272 (QB1.A77, v. 185).

2368

Pickering, Edward C. Comparison stars for Halley's Comet. [Cambridge, Mass., Published by the Observatory, 1910] 3 p. (Harvard University. Observatory. Circular 156) QB1.H35, no. 156

Gives positions and magnitudes of 106 stars lying near the comet's path.

2369

Pickering, Edward C. Halleyscher Komet 1909 c. Astronomische Nachrichten, Bd. 183, Nr. 4381, 5. Jan. 1910: columns 201–202. QB1.A77, v. 183

A telegram (in English) announces findings by Frost and Parkhurst that the comet's light is "now largely due to third cyanogen band."

2370

Pickering, James S. Comet insurance. Halley. *In his* Asterisks; a book of astronomical footnotes New York, Dodd, Mead [1964] p. 12–13, 104–105. illus. QB51.P6

Two very short radio scripts, the first on the 1910 appearance of Halley's Comet, and the second, about Halley and his prediction.

2371

Pickering, William H. Halley's Comet, suggestions for its observation. Popular astronomy, v. 18, Mar. 1910: 129–132. QB1.P8, v. 18

A French translation, "Suggestions pour l'observation de la comète de Halley," appears in the *Bulletin* of the Société astronomique de France, 24. année, avril 1910, p. 185–188 (QB1.S6, v. 24).

2372

Pickering, William H. The return of Halley's Comet, with remarks on comets in general. Century, v. 79, Apr. 1910: 909–917. illus. AP2.C4, v. 79

Bibliographic footnotes.

The headpiece, drawn by Patrick Nelson, shows the comet in 1835. Among the text figures are diagrams of the orbit of the earth and that of the comet in 1910 and 1835.

2373

Pidoux, Justin. Observations de la comète de Halley (1909 c) faites à l'observatoire de Genève (équatorial de 10 pouces). Astronomische Nachrichten, Bd. 185, Nr. 4436, 24. Aug. 1910: columns 323–326. QB1.A77, v. 185

Observations made Dec. 30, 1909–Apr. 23, 1910.

2374

Pidoux, Justin. Positions de la comète de Halley prises à l'equatorial de 10 pouces de l'observatoire de Genève. Astronomische Nachrichten, Bd. 186, Nr. 4454, 11. Nov. 1910: columns 211–214. QB1.A77, v. 186

Observations made Apr. 27–June 20.

2375

Pidoux, Justin. [Sur le passage de la comète de Halley dans le voisinage de la terre pendant sa présent apparition] Archives des sciences physiques et naturelles, 4. période, t. 29, 15 mai 1910: 542–543. Q2.A772, s. 4, v. 29

Summary of a paper read at the Mar. 3, 1910, meeting of the Société de physique et d'histoire naturelle of Geneva.

2376

Pieśn o komecie nowa, która się teraz okazała w miesiącu wrześniu, y każdy ią kto iedno chce, po zachodzie słońca snadnie obaczy roku 1607. Na nutę, jako: Wszechmocny Panie wiekuisty Boże. [n.p., 1607] 2 p.

Cited in Estreicher's *Bibliografia polska*, t. 24, p. 255.

2377

Pingré, Alexandre G. Cométographie; ou, Traité historique et théorique des comètes. A Paris, De l'Impr. royale, M. DCCLXXXIII–M. DCCLXXXIV. 2 v. plates. QB721.P65

"Table des citations abrégées, employées dans l'Histoire générale des comètes, & leur signification": v. 1, p. 201–242.

The following appearances of Halley's Comet are described in v. 1:
466 B.C., p. 574;
239 B.C., p. 265, 575;
86 B.C., p. 274–275;
11 B.C., p. 280–281, 580–581;
A.D. 66, p. 288;
A.D. 141, p. 292, 574–575;
A.D. 218, p. 296–297;
A.D. 295, p. 595;
A.D. 374, p. 302;
A.D. 451, p. 312–313, 601;
A.D. 530, p. 315–318;
A.D. 607, p. 327, 606;
A.D. 684, p. 333, 609;
A.D. 760, p. 336–337, 611;
A.D. 837, p. 340–345;
A.D. 912, p. 353, 618;
A.D. 989, p. 358–359, 620;
A.D. 1066, p. 373–378, 623;
A.D. 1145, p. 393, 627–628;
A.D. 1222, p. 399–400, 629;
A.D. 1301, p. 420–423;
A.D. 1378, p. 442;
A.D. 1456, p. 459–464; and
A.D. 1531, p. 487–489.

In v. 2:
A.D. 1607, p. 3;
A.D. 1682, p. 28; and
A.D. 1759, p. 63–68.

References to sources are given in the margins.

2378

Pingré, Alexandre G. Lettre de M. Pingré, bibliothècaire de Ste Geneviève, de l'Académie royale des sciences, au sujet de la comète dont on attend le retour. Mémoires pour l'histoire des sciences et beaux-arts, avril 1759, 2. v.: 991–1008. AS161.T8, 1759

A supplementary note appears on p. 1142–1143 of the same issue.

2379

Placentzen, Vincentz von. Rechtliches Bedencken über die Cometen, durch Veranlassung eines abermaligen, neuen, merckwürdigen, und in diesem August-Monat, uns zu erst zu Gesicht gekommenen und bemerckten Cometens, eröffnet. [n.p.] M. DC LXXXII. 36 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C2. 60.

Bibliographic footnotes.

2380

Plasse, Georges. Une expédition scientifique au pic de Ténériffe. L'Illustration, t. 135, 11 juin 1910: 530–532. illus. AP20.I3, v. 135

Mascart's visit to Tenerife to observe Halley's Comet. Among the illustrations is a drawing by Plasse that shows Mascart standing on a pile of crates to view the comet through a telescope.

2381

Plassmann, Joseph. Der Halleysche Komet. *In* Jahrbuch der Naturwissenschaften. 25.–26. Jahrg.; 1909/10–1910/11. Freiburg im Breisgau, Herdersche Verlagshandlung, 1910–11. p. 99–100; p. 99–102. illus. Q9.J2, v. 25–26

Bibliographic footnotes.

An adaptation of Bemporad's graph of the comet's fluctuating brightness is reproduced.

See also Plassmann's brief report, "Bevorstehende Wiederkehr des Halleyschen Kometen," in 24. Jahrg., 1908/9, p. 107 (Freiburg im Breisgau, Herdersche Verlagshandlung, 1909), which includes an ephemeris for the period Apr. 7, 1909–June 7, 1910, excerpted from *Astronomische Nachrichten*, Bd. 179, Nr. 4294/4295, 31. Dez. 1908, column 370 (QB1.A77, v. 179).

2382

Plassmann, Joseph. Der Halleysche Komet. *In* Vereinigung von Freunden der Astronomie und Kosmischen Physik, *Berlin*. Mitteilungen, 20. Jahrg., Jan. 1910: 1–5. DN-Ob

Includes an ephemeris for the period Jan. 2–May 22. On p. 15 of the same issue are details for three additional dates in the same period, copied from the *Journal* of the British Astronomical Association.

2383

Plassmann, Joseph. Kometen und Volksbewusstsein. Hochland, 7. Jahrg., Feb. 1910: 622–624. AP30.H67, v. 7

Deplores the ignorance of astronomy to be found among even the educated classes and concludes that if Halley's Comet succeeds in arousing their interest in celestial phenomena, it will indeed have been a good omen.

2384

Plassmann, Joseph. Ein kurzer Epilog über den Halleyschen Kometen. *In his* Die Kometen. Darstellung der wichtigsten Beobachtungs-Ergebnisse und Erklärungs-Versuche. Köln, Kommissions-Verlag und Druck von J. P. Bachem, 1910. (Erste Vereinsschrift der Görres-Gesellschaft für 1910) p. 94–100.

Jean Mascart, an astronomer on the staff of the Paris observatory, was invited to participate in an international scientific expedition to Tenerife in the spring of 1910. He chose a site at an altitude of 8,900 feet on the southern flank of Pico de Teide, mounting his telescope on a pier made of reinforced concrete and himself on a perch of packing cases. The air, with a relative humidity of 5 percent, was uncommonly clear—Mascart wrote of the incredible number of brilliant stars, which rose suddenly, in full splendor, over the dark horizon, and disappeared with equal abruptness when they set. He observed Halley's Comet and the planet Jupiter for about six weeks, returning with many photographs and sketches. The Parisian artist, Georges Plasse, who accompanied the expedition, specialized in portraiture; here he shows Mascart studying the comet at 3 a.m. on May 17. From *L'Illustration*, t. 135, 11 juin 1910, p. 531.

2385
Plassmann, Joseph. Von den zwei Kometen. Hochland, 7. Jahrg., März 1910: 706–713. plate. AP30.H67, v. 7.1
About Halley's Comet and comet 1910a.

2386
Plassmann, Joseph. Weitere Mitteilungen über den Halleyschen Kometen. *In* Vereinigung von Freunden der Astronomie und kosmischen Physik, *Berlin*. Mitteilungen, 20. Jahrg., Sept. 1910: 94–96. DN-Ob
Reports from observers in Arnsberg, Münster/Westf., and Dar-es-Salaam.

2387
Plassmann, Joseph. Weitere Notizen über den Halleyschen Kometen. *In* Vereinigung von Freunden der Astronomie und kosmischen Physik, *Berlin*. Mitteilungen, 20, Jahrg., Juli 1910: 77–79. DN-Ob
Mostly on observations made during the period May 18–20.

2388
Plassmann, Joseph. Zur Literatur des Halleyschen Kometen. *In* Vereinigung von Freunden der Astronomie und kosmischen Physik, *Berlin*. Mitteilungen, 20. Jahrg., Apr. 1910: 50–51. DN-Ob
Describes some new publications.

2389
Pless, L. C. Planetary spacecraft—SEPS interface design. AIAA/SAE/ASME 16th Joint Propulsion Conference, June 30–July 2, 1980/Hartford, Connecticut. [New York, American Institute of Aeronautics and Astronautics, 1980] 7 p. illus. (AIAA [paper] 80–1227) Sci RR
References (9): p. 7.
"A design study was undertaken at JPL to develop a spacecraft to fly-by the comet Tempel II ... This paper summarizes the SEPS related interface design issues and some tentative solutions." Among the topics considered is the Halley probe release.

2390
Plummer, Henry C. K. Halley's Comet and its importance. Nature, v. 150, Aug. 29, 1942: 249–257. Q1.N2, v. 150
References (5): p. 257.

2391
[Plummer, William E.] The comets of 1909. *In* Royal Astronomical Society. Monthly notices, v. 70, Feb. 1910: 340–342. QB1.R7, v. 70
A portion of the annual report of the Society's council; something under half is concerned with Halley's Comet (1909 c). The comet also receives attention in many of the reports of proceedings of observatories (p. 311–338, and, in the Mar. 1910 issue, p. 479–481).

2392
[Plummer, William E.] Comets of 1910. *In* Royal Astronomical Society. Monthly notices, v. 71, Feb. 1911: 318–320. QB1.R7, v. 71

A portion of the annual report of the Society's council; about a third is devoted to Halley's Comet. Observations of the comet are also discussed in many of the reports of proceedings of observatories (p. 288–316).

2393
Podgornyĭ, I. M., Ė. M. Dubinin, *and* P. L. Izraĭlevich. The estimates of the magnetic field in Halley's comet. Moon and the planets, v. 27, Aug. 1982: 135–138. illus. QB581.M65, v. 27
Letter to the editor.
References (9): p. 138.
"The estimates of the magnetic field in the Halley's comet tail based on the observed acceleration of the matter and the pressure balance are discussed."

2394
Podgornyĭ, I. M.. Ė. M. Dubinin, *and* P. L. Izraĭlevich. Laboratory simulation of the induced magnetospheres of comets and Venus. Moon and the planets, v. 23, Nov. 1980: 323–338. QB581.M65, v. 23
References (28): p. 337–338.
"The comparison of data obtained in laboratory experiments on the solar wind interaction with a body endowed with a plasma shell, the observations of comet type I tails and the direct measurements near Venus show that an induced magnetosphere is formed with an extended magnetic tail . . . The analysis of the condensation motion in Halley's comet yields an estimate of tail magnetic field of 30 to 50 γ . . ."

2395
Pogibnet li zemli͡a i chelovi͡echestvo 5/18 ma͡ia (Kometa Gallei͡a). Obshchedostupnoe izlozenīe. Moskva, Izd. K-va Maksimova, 1910. 15 p.

2396
Pokrovskiĭ, Konstantin D. Komety v russkikh li͡etopisi͡akh. Mīr bozhīĭ, god. 12, apr. 1903 g.: 235–256.
Includes information on appearances of Halley's Comet.

2397
Polak, Iosif F. Khvost komety Gallei͡a v mai͡e 1910 goda. (Predvaritel′noe soobshchenīe). *In* Akademii͡a nauk SSSR. Izvi͡estii͡a Rossīĭskoĭ akademīi nauk, 6. ser., t. 12, 15 dek. 1918: 2203–2232. illus.
AS262.A624, s. 6, v. 12

2398
Polak, Iosif F. Kometa Gallei͡a v 1910 godu. *In* Russkīĭ astronomicheskīĭ kalendar′ (ezhegodnik) na 1912 god. 18-ĭ g. izd. Nizhnīi-Novgorod, Izd. Nizhegorodskago kruzhka li͡ubiteleĭ fiziki i astronomīi, 1912. p. [137]–147.

2399
Polak, Iosif F. Der Schweif des Halleyschen Kometen zur Zeit seiner grössten Annäherung an die Erde am 19.–20. Mai 1910. Astronomische Nachrichten, Bd. 220, Nr. 5275, 5. März 1924: columns 309–318. plate.
DN-Ob

2400
Polak, Iosif F. Skol'ko khvostov bylo u komety Galleia 1910/II? Russkiĭ astronomicheskiĭ zhurnal, t. 3, vyp. 2, 1926: 92–102. illus. QB1.A47, v. 3

Abstract in English.

2401
Polak, Iosif F. Stroenie khvosta komety Galleia 1910 II. *In* Saratov (City), Russia. Universitet. Uchebnye zapiski. t. 1; 1923. Saratov. p. [37]–104. AS262.S462, v. 1

Based on a collection of 240 observations made Apr. 27–June 10, 1910. A list of sources is given on p. 40–43.

2402
Polak, Iosif F. Der Typus und die Repulsivkraft des Hauptschweifes des Halleyschen Kometen 1910 II. Astronomische Nachrichten, Bd. 220, Nr. 5275, 5. März 1924: columns 305–310. DN–Ob

2403
Polanski, Eugen R. Der Halleysche Komet. Nebst einer kurzgefassten Abhandlung über die Kometen im allgemeinen und einer Biographie des Astronomen Edmund Halley. Volksausg. Prossnitz, F. Karásek [1910] 62 p. illus.

Issued also in Czech as *Halleyova kometa; se stručnou úvahou o vlasaticich vůbec a biografii hvězdáře Edmunda Halleye* (V Prostějově, F. Karásek [1910] 56 p.).

2404
Poltz, Johann M. Eine neue grosse Him̃els-Lampe, von dem grossen Herrn und Herrscher Himmels und der Erden, am hohen Himmel auffgehencket, und seinen aus Erden formierten, und meherentheils Irrdisch-gesumeten Kindern, ümb sie abermahl wacht zu machen, Himmel-anzuführen, und seine Wercke gebührend zubetrachten, eine Weile vorgetragen; ist der neue Comet, so im August-Monaht dieses lauffenden 1682sten Jahres, allhie zu Rostock, und an vielen andern Orten, erschienen; welchen mit Fleiss observiret, ümbständlich beschrieben, in Kupffer abgebildet, und der Nach-Welt, auff inständiges Begehren, durch öffentlichen Druck, hiemit Kund machen wollen. Rostock, Gedruckt bey seel. F. Keilenbergs Wittwen [1682] 16 p. plate. NNC

The plate shows the comet's path among the constellations, which are identified as fl Jordanis (now Canes Venatici) and Coma.

2405
Pommerhanz, Karl. Die verhängnisvolle Anziehungskraft. Meggendorfer-Blätter, 81. Bd., 3 Mai 1910: 87. illus.

In a series of cartoons, the comet is seen approaching an observer and diving into the telescope; in making its escape it wrecks the instrument and knocks down the observer, while the moon and stars laugh.

2406
Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 14 sept. 1835: 112–113. Q46.A14, v. 1

Discusses, in a letter to Arago, an error in the calculations on which he based a paper on determining the time of the comet's perihelion passage from three observations, read at the previous week's meeting of the academy. The paper referred to was mentioned but not published or analyzed in the *Comptes rendus* for Sept. 7.

2407

Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 12 oct. 1835: 205–208. Q46.A14, v. 1

Further corrections resulting from revision of the perturbations of the comet's orbit during the period 1682–1759 and use of more accurate figures for the masses of Jupiter and the earth.

See also a note in the issue for 19 oct. (p. 241–242) concerning his calculations of perturbations by Lagrange's method and the close correspondence of the results with those obtained using the method of quadratures.

2408

Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. [La comète de Halley] *In his* Traité élémentaire de physique céleste; ou, Précis d'astronomie théorique et pratique [1. ptie.] Paris, Carilian-Goeury et V. Dalmont, 1840. p. 363–3[illegible]1. QB43.P81

The chapter entitled "Perturbations du mouvement elliptique des comètes" also contains a section on Halley's Comet (2. ptie., p. 585–587).

2409

Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Comète de Halley. Lettre de M. de Pontécoulant à M. Arago, en réponse aux doutes élevés par M. Valz sur l'exactitude de ses calculs. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 19 oct. 1835: 234–235. Q46.A14, v. 1

Reprinted in Arago's *Œuvres complètes*, t. 11, p. 488–489 (Paris, Gide, 1859. Q113.A75, v. 11).

2410

Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Détermination du prochain retour au périhélie de la comète de 1759. *In* France. *Bureau des longitudes*. Connaissance des tems ... pour l'an 1833. Paris, Bachelier, 1830. Additions, p. 104–113. QB8.F9, 1833

"Cette note est extraite du Mémoire qui a remporte le grand prix de Mathématiques proposé par l'Académie des Sciences, pour l'an 1829." A comparison of this extract with the published memoir (see item 2414) shows that the latter must have undergone considerable revision before its appearance in 1835.

2411

Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Détermination du prochain retour au périhélie de la comète de 1759. *In his* Théorie analytique du système du monde. 2. éd., considérablement augm. t. 2. Paris, Mallet-Bachelier, 1856. p. 131–148. QB351.P81, v. 2

Revision of the sections published in the first edition, t. 2, p. 130–147 (Paris, Bachelier, 1829. QB351.P8, v. 2). Neither version is the same as item 2410.

2412
Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Extrait d'une lettre de M. de Pontécoulant à M. Arago, concernant, d'une part, le désaccord qui paraissait exister relativement à l'action des petites planètes, entre les calculs des perturbations de la comète de Halley exécutés par M. de Pontécoulant et ceux de M. Rosenberg [sic], et de l'autre, l'influence qu'une petite et dernière correction dans la masse de Jupiter, a exercée sur la détermination de l'instant du passage au périhelie. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 1, 23 nov. 1835: 361–363.
Q46.A14, v. 1

2413
Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Mémoire sur le calcul des perturbations de la comète de Halley, dans l'intervalle de 1682 à 1835. *In* France. *Bureau des longitudes.* Connaissance des tems . . . pour l'an 1838. Paris, Bachelier, 1835. Additions, p. 67–119. QB8.F9, 1838

2414
Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Mémoire sur le calcul des perturbations et le prochain retour à son périhélie de la comète de Halley. *In* Académie des sciences, *Paris.* Mémoires présentés par divers savans. Sciences mathématiques et physiques. 2. ser., t. 6. Paris, Bachelier, 1835. p. [873]–947. Q46.A144, s. 2, v. 6

"Mémoire couronné par l'Académie des sciences, en 1829."

2415
Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Note sur la détermination du prochain retour de la comète de 1759. *In* France. *Bureau des longitudes.* Connaissance des tems . . . pour l'an 1837. Paris, Bachelier, 1834. Additions, p. 102–104. QB8.F9, 1837

2416
Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Notice sur la comète de Halley et ses apparitions successives de 1531 à 1910. *In* Académie des sciences, *Paris.* Comptes rendus hebdomadaires des séances, t. 58, 18–25 avril, 2 mai 1864: 706–709, 766–769, 825–828. Q46.A14, v. 58

An error on p. 828 is corrected in the issue of 16 mai 1864, p. 915.

2417
Pontécoulant, Philippe Gustave Le Doulcet, *comte* de. Notice sur la comète de Halley, et son retour en 1835, suivi d'un éphéméride calculé par M. A. Bouvard. Paris, Bachelier, 1835. 132 p. fold. chart. QB723.H2P8

The ephemeris covers the period Aug. 20–Dec. 26, 1835. The chart, by Eugène Bouvard, shows the path of the comet among the constellations during the period Aug. 20–Oct. 19.

An English translation by Charles Gold, entitled *A History of Halley's Comet, With an Account of its Return in 1835, and a Chart, Showing its Situation in the Heavens* (London, J. W. Parker, 1835. 44 p.), is held by NIC.

A German translation by Evander entitled *Nachricht über den Kometen von Halley, und seine Zurückkunft im Jahre 1835; nach einer von A. Bouvard berechneten Ephemeride* (Heidelberg, K. Groos, 1835. 134 p.) is held by NN and OU.

A Dutch translation, *De Halleysche Komeet, en hare wederkomst in 1835* (Breda, Broese, 1835. 97 p.), is held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 413.

2418
Pope, Joseph. Halley's Comet. *In* Royal Astronomical Society of Canada. Transactions of the Toronto Astronomical Society for the year 1901, including twelfth annual report. Toronto, Z. M. Collins, publisher to the Society, 1902. p. 52–60. QB1.R484, 1901

2419
The Pope and the comet. Presbyterian banner, v. 96, Oct. 14, 1909: 598. BX8901.F48, v. 96

The story that Pope Calixtus III launched a bull against Halley's Comet in 1456 "has been thoroughly disproved by both Catholic and Protestant writers . . . Let the truth be told."

2420
Popov, Kiril. Observations de la comète de Halley, faites à l'observatoire de Sofia (Bulgarie), le 18 mai 1910. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 150, 30 mai 1910: 1406–1407. Q46.A14, v. 150

2421
Porter, Elizabeth C. Curiosity and the comet. Nation, v. 90, May 26, 1910: 535. AP2.N2, v. 90

Letter to the editor that includes the text of the anonymous poem about the comet's 1759 appearance ("Hah! there it flames, the long expected star"), evidently clipped from a New York weekly of the period (perhaps the *New York Mercury*; see item 2267).

2422
Porter, Jermain G., *and* Everett I. Yowell. Observations of Halley's Comet, made with the 16-inch equatorial at the Cincinnati Observatory. Astronomical journal, v. 26, Jan. 1, 1911: 178. QB1.A3, v. 26

Observations made Jan. 3–June 11, 1910.

2423
Porter, Jermain G., *and* Everett I. Yowell. Observations of minor planets and comets, made with the 16-inch equatorial at the Cincinnati Observatory. Astronomical journal, v. 26, May 4, 1910: 83–84. QB1.A3, v. 26

Includes observations of Halley's Comet made Nov. 4–Dec. 17 (p. 84).

2424
Pour l'observation de la comète de Halley. La Nature, 38. année, 15 jan. 1910, suppl.: 49. Q2.N2, v. 38.1

On the activities of the Astronomical and Astrophysical Society of America.

2425

Pournelle, Jerry. The alternate view: the Halley dilemma. Analog science fiction/science fact, v. 101, Dec. 7, 1981: 81–84. illus. PZ1.A1A48, v. 101

Urges support of the proposed NASA intercept mission.

2426

Powalky, Karl R. Beobachtungen des Halleyschen Kometen auf der Hamburger Sternwarte, von Herrn Director Rümker, im Jahre 1835. Astronomische Nachrichten, 23. Bd., Nr. 544, 23. Aug. 1845: columns 241–244. QB1.A77, v. 23

2427

Powers, T. E. Halley's Comet. New York American, May 4, 1910: 22. illus. N&CPR

Six cartoons featuring the comet; half of them illustrate its convenience as an excuse in almost any difficult situation.

2428

Pračka, Ladislav. Kometa Halleyova. Příroda, roč. 8, list. 1909, ún., červen. 1910: 63–64, 180–181, 378–380.

See also brief notes in the issues of říj. 1909, p. 37, and květ. 1910, p. 311.

2429

Prager, Richard. Beobachtungen von Kometen mit dem Repsoldschen 24 cm Refraktor der Sternwarte Santiago de Chile. 1) Halleyscher Komet 1909 c. Astronomische Nachrichten, Bd. 188, Nr. 4501, 29. Mai 1911: columns 217–226. QB1.A77, v. 188

Observations cover the period Dec. 5, 1909–Aug. 12, 1910.

2430

Precepts for determining, from one single observation, the whole apparent course of the expected comet, with directions in what part of the heavens to look for it every month in the year. Gentleman's magazine, v. 26, Sept. 1756: 413. plate. AP4.G3, v. 26 Rare Bk. Coll.

Includes "A table shewing where the comet may be expected to begin to appear any month." The figure occupies the upper half of a plate facing p. 414.

A French translation, "Déterminer d'aprés une premiere observation le cours de la comete, dont les astronomes ont prédit le retour pour l'année 1758," appears in the *Journal encyclopédique*, 15. nov. 1756, p. 29–36; the figure is on a folded plate at the end of the issue (AP20.J8, 1756, v. 8).

2431

Preece, W. G. Observations of Halley's Comet made on board s.s. "Miami." *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 621. QB1.R7, v. 70

Brief description of observations made Apr. 29–May 16 from the Atlantic Ocean.

2432

Preparing for the comet. Flight international, v. 121, Feb. 6, 1982: 285. TL501.F5, v. 121

Notes that "A mission review of Europe's Giotto flypast of comet Halley is to be held in March" and reports briefly on a meeting of world scientists at Padua in September to discuss Halley observation. "The conference will meet once a year until March 1987, with the aim of co-ordinating plans to ensure maximum scientific return from the various encounters."

2433
Prickett, W. Z. A 120 kWe thermionic reactor ion propulsion spacecraft for the Comet Halley rendezvous mission. *In* Thermionic Conversion Specialist Conference, *9th, Miami Beach, Fla., 1970.* Conference record; papers presented at the ninth annual conference, Miami Beach, Florida, October 26–29, 1970. New York, Institute of Electrical and Electronics Engineers, 1970. p. 368–375. illus.

AIAA accession no. A71–2[illegible]896.

References (8): p. 372.

"Thermionic reactor power systems are integrated into a large unmanned electric propulsion spacecraft. Both 120 kWe (Pe) U-235 externally fueled and U-233 flashlight reactor power plants are to be investigated. The reference mission is the 940 day Halley Comet rendezvous, requiring an April 1983 launch."

2434
Prieto, Sotero. Observaciones sobre un estudio del Sr. D. Jesús Gasca relativo al cometa de Halley. *In* Academia nacional de ciencias Antonio Alzate, *Mexico*. Revista científica y bibliográfica, t. 32, agosto de 1912: 25–31.
Q23.A6, v. 32

Presented at the Society's meeting held Dec. 3, 1911.

2435
Pring, John N. Meteorological observations during the passage of the earth through the tail of Halley's Comet. Nature, v. 83, June 9, 1910: 427.
Q1.N2, v. 83

Reports, in a letter to the editor, that measurements of the amount of ozone and oxides of nitrogen in the atmosphere, taken May 18–19, revealed no significant changes.

2436
Printezēs, Frankiskos. Ho komētēs erchetai. Hē Physis, periodos 3, t. 10, 15 noem. 1909: 177–178. AP85.P5, s. 3, v. 10

2437
Printezes, Frankiskos. Hē synantēsis kai hē trochia tou komētou. Hē Physis, periodos 3, t. 10, 15 ian. 1910: 230–231. illus. AP85.P5, s. 3, v. 10

The illustration is Rudaux's drawing of the orbits of the earth and the comet during May, to which Printezēs has signed his name; Mercury is incorrectly labeled Mars.

2438
Problem proposed to the astronomers. Gentleman's magazine, v. 29, Apr. 1759: 154. AP4.G3, v. 29 Rare Bk. Coll.

Letter signed Astrophilus.

Invites mathematical readers to determine the date and distance of the comet's nearest approach to the earth.

Published also in the *Scots Magazine*, v. 21, Apr. 1759, p. 208 (AP3.S35, v. 21).

2439

Le Prochain passage de la terre dans la comète de Halley. Bibliothèque universelle, t. 57, fév. 1910: 433–434. AP24.B5, v. 57

2440

Proctor, Mary, *and* Andrew C. D. Crommelin. Comets: their nature, origin, and place in the science of astronomy. London, Technical Press, 1937. 203 p. QB721.P78

"The Story of Halley's Comet": p. 43–60.

"Return of Halley's Comet in 1910": p. 61–75.

2441

Proctor, Mary. Fears of the comet are foolish and ungrounded. New York times, v. 59, May 8, 1910, magazine section: 7. illus. N&CPR

2442

Proctor, Mary. Return of Halley's Comet. Scientific American supplement, v. 68, Oct. 16, 1909: 255. T1.S52, v. 68

Letter to the editor.

2443

Proctor, Mary. Return of Halley's Comet in 1910. *In her* The romance of comets. New York, Harper 1926. p. 94–132. illus., plates.
QB721.P8

Includes details of the author's own observations, made from the summit of the *Times* building during May.

References to Halley's Comet occur elsewhere in the volume, but there is no index.

2444

Proctor, Mary. Return of Halley's Comet in 1910. Scientific American, v. 94, June 9, 1906: 474. T1.S5, v. 94

2445

Proctor, Mary. The story of the comets. *In her* The children's book of the heavens. Boston, Little, Brown, 1925. p. 151–168. illus., col. plate.
QB46.P85 1925

Just over half of the chapter is devoted to Halley's Comet and the author's observations of it in September 1909 and May 1910 (p. 156–165). The plate reproduces a painting by Evelyn Paul, "Halley's Comet Seen From Paris."

2446

Proctor, Mary. What the recent visit of Halley's Comet showed. New York times, v. 59, July 3, 1910, magazine section: 13. illus. N&CPR

2447
Professor H. H. Turner on Halley's Comet. English mechanic and world of science, v. 90, Nov. 26, 1909: 391–392. T1.E5, v. 90
Summarizes a lecture given at the Birmingham Town Hall on Nov. 21.

2448
Professor McAdam and the comet. New York American, May 17, 1910: 20. N&CPR
Dunlap J. McAdam, on the staff of Washington and Jefferson College, "is not perfectly sure that the comet is harmless. He says it is not possible to be sure—because comets are proverbially erratic ... The doubt is worth noticing, if for no other reason than that it serves to remind us that astronomers are not omniscient, and do not pretend to be."

2449
Le Projet franco-soviétique VEGA entre en phase de réalisation. COSPAR information bulletin, no. 93, Apr. 1982: 98–99. TL787.C2, 1982
"Extract from 'La Lettre du CNES' No. 78 of November 1981."

2450
Provis, Charles. [Halley's Comet] English mechanic and world of science, v. 91, July 1, 1910: 497. T1.E5, v. 91
Letter to the editor reporting a "splendid view of the comet" at Victoria, B.C., on the night of the moon's eclipse (May 23).

2451
Pruett, James Hugh. Halley's Comet. Sky and telescope, v. 8, Nov. 1948: 12. illus. QB1.S536, v. 8
Notes that the comet was then at aphelion.

2452
Przygotowania do pościgu za kometą Halleya. Wszechświat, t. 83, paźdz. 1982: 162. QH7.W8, v. 83
Signed J. G. W.

2453
Publicité céleste. Le Rire, 21 mai 1910: [16] col. illus. AP103.R4, 1910
Unsigned drawing poking fun at the use of the comet by advertisers.

2454
Quand verra-t-on la comète? Gazette astronomique, 2. année, no 22, 30 sept. 1909: 79. QB1.G3, v. 2
"Si le retour de la comète de Halley si près de la position qui lui était assignée longtemps à l'avance constitue une des plus éclatantes confirmations de l'admirable précision et du perfectionnement des méthodes astronomiques il est à craindre qu'au point de vue 'spectacle' l'astre, à son retour actuel, constituera une désillusion et qu'il passera vraisemblablement inaperçu du grand public."
Includes ephemeris for Sept. 4–Nov. 23.

2455

Quel est le pape qui défendait de parler des comètes? L'Intermédiaire des chercheurs et curieux, 20. année, 10–25 fév., 10 avril, 25 juin 1887: columns 65, 122–123, 211–212, 365. AG309.I6, v. 20

The question arose because of a line in Victor Hugo's "Le Cid exilé"; most of the replies discuss the disputed behavior of Pope Calixtus III in regard to the 1456 comet.

2456

Quénisset, Ferdinand. La comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, fév. 1910: 97–98. illus. QB1.S6, v. 24

Reproduces a photograph taken at Flammarion's observatory at Juvisy on Jan. 7.

2457

Quénisset, Ferdinand. [La comète de Halley] *In* Société astronomique de France. Bulletin, 24. année, juin 1910: 283–286. illus. QB1.S6, v. 24

Discusses visual and photographic observations made at Juvisy on Apr. 30 and May 4, 7, 14, and 24. Appended to this report is a note by Paul Jeantet describing the comet's appearance on May 30, a chart showing its path, May 26–July 16, and an ephemeris for June 2–July 16.

2458

Quénisset, Ferdinand. Les comètes de Halley et Daniel. *In* Société astronomique de France. Bulletin, 24, année, jan. 1910: 51. QB1.S6, v. 24

Reports observations made at Juvisy in December. An adjacent article, "Trois comètes visibles" (p. 50–51), includes an ephemeris for Halley's Comet for the period Jan. 5–Apr. 5.

2459

Quénisset, Ferdinand. Observations effectuées à l'observatoire Flammarion, de Juvisy. *In* Société astronomique de France. Bulletin, 24. année, août 1910: 367–369. illus. QB1.S6, v. 24

Observations made May 31–June 8. Illustrated by a sketch and a photograph, both made June 2.

2460

Quénisset, Ferdinand, *and* Fernand Baldet. Photographie de la comète de Halley à l'observatoire de Juvisy. *In* Société astronomique de France. Bulletin. 24. année, avril 1910: 191–192. illus. QB1.S6, v. 24

A photograph taken Feb. 12 and a sketch made Mar. 5 are reproduced.

2461

Quénisset, Ferdinand. Réobservation de la comète de Halley. *In* Société astronomique de France. Bulletin, 24. année, mai 1910: 233. illus. QB1.S6, v. 24

Describes and sketches first appearance of the comet on Apr. 18 following superior conjunction.

2462
Quetelet, Lambert Adolphe J. Sur la réapparition des comètes d'Encke et de Halley pendant l'année 1835. *In* Brussels. Observatoire royal de Belgique. Annuaire. 1835. Bruxelles, M. Hayez, 1834. p. 225–244. fold. chart.
QB9.B8, 1835
"Comète de Halley ou de 1759": p. 230–239. The chart shows the path of Halley's Comet among the constellations during the period Aug. 7, 1835–Feb. 11, 1836.

2463
Quignon, Georges A. Notice historique sur la comète de Halley. *In* Société belge d'astronomie, de météorologie et de physique du globe, *Brussels*. Annuaire pour l'an 1910. 15. année. Bruxelles, Veuve F. Larcier, 1910. p. [163]–175. plates, port.
Bibliographic footnotes.
See also "Comète 1909c" on p. 105 of the same volume, and p. 107–108 of the *Annuaire pour l'an 1911*.

2464
Quignon, Georges A. Observations de la comète de Halley. Ciel et terre, 31. année, août 1910: 340–341. QB1.C5, v. 31
Made at intervals during the period Dec. 29, 1909–May 26, 1910, at Mons.

2465
Rademacher, Johann. Unser Wissen von den Kometen. Der Halleysche Komet. Kometen und Weltuntergang. Wien, A. Opitz Nachf., 1910. 39 p. illus.

2466
Radzievskiĭ, Vladimir V., *and* L. A. Alekseeva. Prosteĭshiĭ sposob vychisleni͡a efemeridy komety Gallei͡a. Astronomicheskiĭ vestnik, t. 15, okt./dek. 1981: 239–243. QB1.A467, v. 15
References (2): p. 243.
Abstract in English.
An English translation, "A Very Simple Method for Calculating the Ephemeris of Halley's Comet," appears in *Solar System Research*, v. 15, Apr. 1982, p. 178–181 (QB501.S64, v. 15).

2467
Rahe, Jürgen. Appendix. 3.3.3.10. Comet Halley. *In* Zahlenwerte und Funktionen aus Naturwissenschaften und Technik. Neue Serie. Gruppe 6. Astronomie, Astrophysik und Weltraumforschung. Bd 2. Astronomie und Astrophysik. Teilband C. Interstellare Materie; die Galaxis; Universum. . Herausgeber: K. Schaifers und H. H. Voigt. Berlin, New York, Springer-Verlag, 1982. p. 375–395. illus.
QC61.Z3, Gruppe 6, v. 2C
References (22): p. 394–395.
Contents: 1. Orbital calculations, historical apparitions.—2. The 1910 apparition.—3. The 1985/86 apparition.—4. Comet Halley missions.—5. Other future comets.—6. References.

2468
Rahe, Jürgen, Bertram Donn, *and* Karl Wurm. Atlas of cometary forms: structures near the nucleus. Washington, D.C., National Aeronautics and Space Administration [1969] 128 p. QB722.R28
Bibliography: p. 127.
Come Halley 1835 III is included in "Visual Observations of Comets" (p. 2–7). Comet Halley 1910 II is treated in "Visual Observations of Comets" (p. 34–37); "Comparison of Visual and Photographic Observations of Comets" (p. 42–44); "Photographic Observations of Comets" (p. 76–97); and "Influence of Instrumental Factors on the Appearance of a Comet" (p. 112–116).

2469
Rahe, Jürgen, *and* Gerhard Schnur. Ground-based and extraterrestrial observations before and during a comet mission. *In* Workshop on Cometary Missions, *Bamberg, 1979.* Cometary missions; proceedings. [Edited by] W. I. Axford, H. Fechtig, J. Rahe. Bamberg, 1979. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 132) p. 27–31. illus. DN-Ob
References (6): p. 31.

2470
Rahe, Jürgen, John C. Brandt, Louis D. Friedman, *and* Ray L. Newburn. Halley's Comet and plans for its observation during its return in 1986. *In* European Regional Meeting in Astronomy, *6th, Dubrovnik, 1981.* Sun and planetary system. Proceedings of the sixth European Regional Meeting in Astronomy, held in Dubrovnik, Yugoslavia, 19–23 October 1981. Edited by W. Fricke and G. Teleki. Dordrecht, Holland, Boston, D. Reidel Pub. Co. [1982] (Astrophysics and space science library, v. 96) p. 307–320. illus. QB1.E86 1981
References (10): p. 320.
Contents: 1. Introduction.—2. Orbit calculation.—3. Physical properties of Halley's Comet.—4. The 1986 apparition.—5. Space missions to Comet Halley.—6. International Halley Watch.
Among the illustrations is a photograph of the departing comet taken at Lowell Observatory on May 30, 1911.

2471
Rahe, Jürgen, *and* Ray L. Newburn. The International Halley Watch. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 301–309. illus.
Discussion: p. 309.

2472
Rahe, Jürgen. Komet Halley 1985/86. Sterne und Weltraum, 21. Jahrg., Jan. 1982: 21–24. illus. QB1.S854, v. 21

2473
Rahe, Jürgen. Plans for Comet Halley. *In* Modern observational techniques for comets; proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. Pasadena, Calif.,

National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. (JPL publication 81–68) p. 277–283. illus. DN-Ob

References (5): p. 283.

Describes ESA's Giotto mission, the Japanese Planet-A mission, and the Soviet Venera-Halley mission.

2474

Rahe, Jürgen, *and* Ray L. Newburn. Vorbereitungen auf Komet Halleys Wiederkehr 1985/86. *In* Astronomische Gesellschaft. Mitteilungen, Nr. 55, 1982: 19. QB1.A66, no. 55

Abstract of a paper presented at the combined Internationale Astronomische Tagung Innsbruck 1981 and the meeting of the Astronomische Gesellschaft, Sept. 15–18, 1981.

2475

Rambaut, Arthur A. Photographic and visual observations of Halley's Comet (1909 c), Daniel's Comet (1909 e), and Comet 1910 a, made at the Radcliffe Observatory, Oxford. *In* Royal Astronomical Society. Monthly notices, v. 71, Dec. 1910: 133–141. QB1.R7, v. 71

Photographs were made on six dates during the period May 23–June 2, 1910; visual observations made Apr. 24–June 2 are described.

2476

Rambaut, Arthur A. Places of Halley's Comet, 1909–1910, deduced from photographs taken at the Radcliffe Observatory, Oxford. *In* Royal Astronomical Society. Monthly notices, v. 70, Apr. 1910: 497–502. QB1.R7, v. 70

Photographs were made on 19 dates during the period Nov. 7, 1909–Feb. 11, 1910.

2477

Rambosson, Jean P. [Halley's Comet] *In his* Astronomy. Translated by C. B. Pitman. London, Chapman & Hall, 1875. p. 305–310. col. illus. QB44.R16

A sketch of the comet as it appeared in 1835 is reproduced on a plate facing p. 309, and a part of its orbit is shown on a plate facing p. 295.

2478

Ramos da Costa, Augusto. O cometa de Halley e a sua influencia provavel na terra. Illustrado com 12 gravuras. Lisboa, Livraria Ferreira, 1910. 48 p. illus., plates, ports. NN

Errata slip inserted.

Includes consideration of the comet's possible meteorological, magnetic, and seismological effects. On p. 46–48 there is an ephemeris covering the period Sept. 11, 1909–July 25, 1910.

A review by Eugène Lagrange appears in *Ciel et terre*, 31. année, mai 1910, p. 227–228 (QB1.C5, v. 31).

2479

Ramsey, Josephine. Halley's Comet in June. Washington, D.C., H. Kirkus Dugdale Co. [1910] [3] p. Mus

For voice and piano.

Cover design includes faint sketch of a comet.

2480

Ramus, Carl. Ephemeris of great comets, 1402–1948. [Washington, D.C., National Astrological Library, 1960] 81 p. QB722.R3

Includes data for the 1456, 1531, 1607, 1682, 1759, 1835, and 1910 apparitions of Halley's Comet.

"Celebrities born under comets": p. 76–81.

2481

Rankin, Adam A. Recent advances in cometary investigation. *In* Royal Philosophical Society of Glasgow. Proceedings. v. 41; 1909/10. Glasgow, 1910. p. 13–28. illus., plates. Q41.G5, v. 41

Read Jan. 12, 1910. A third of the paper (p. 22–27) deals with Halley's Comet.

2482

Rapoport, Salomon J. L. Sendschreiben Salomo Jehuda Rapaport's an Chajim Selig Slonimski, das Buch Kuchba de-Schebit betreffend. Literaturblatt des Orients, 29. Feb.–28. März, 11., 25. Apr. 1840: columns 133–136, 152–153, 169–172, 182–184, 193–195, 230–231, 259–263.

First published in Hebrew by Ḥayyim Selig Slonimski in his *Toldot ha-shamayim* (W Warszawie, 1838. 71 leaves. QB44.S574 1838 Hebr); translated into German by the editor of *Der Orient*, Julius Fürst.

In discussing numerous astronomical references in Jewish scriptures, the writer refers to the story from the Babylonian Talmud about the voyage of Gamaliel and Joshua and the star that appears every 70 years, and seems to be the first to suggest that this is a reference to Halley's Comet which, according to one Schmitz, has been receding from the sun and therefore had a somewhat shorter period in ancient times. For more on this question, see item 2517 and also William M. Feldman's *Rabbinical Mathematics and Astronomy*, p. 11–12 (London, M. L. Cailingold, 1931. Q128.F4).

2483

Rasmusen, Hans Q. Om komet Halley og andre periodiske kometer. Astronomisk tidsskrift, årg. 16, feb. 1983: 16–22. illus. DLC

References (9): p. 22.

2484

Rasmusen, Hans Q. Table 11. Perturbation from 0.001 of Jupiter on Comet Halley. *In his* The definitive orbit of Comet Olbers for the periods 1815–1887–1956 with a correction to the mass of Jupiter. København, 1967. (Copenhagen. Universitet. Astronomisk observatorium. Publikationer og mindre meddelelser, nr. 194) p. 96–99.

2485

Rasmusen, Hans Q. Three revolutions of the comets Halley and Olbers, 1759–2024. [Copenhagen] Kommissionaer: Munksgaard, 1979. 54 p. (Det Kongelige Danske videnskabernes selskab. Matematisk-fysiske meddelelser, bd. 40, nr. 4) DLC

References (14): p. 54.

"The basic elements and the perturbed motion of the periodic comets Halley and Olbers during their two preceding revolutions and the present one have been computed; ephemerides for their coming return are derived. A non-gravitational effect has been taken into account, and it is shown that in addition to this the comets have been perturbed by other, unknown forces."

2486

Rathbone, A. The pope and the comet. New Ireland review, v. 32, Dec. 1909: 202–208. AP4.N4, v. 32

2487

Raulein, Theodore M. Splendid visitor from afar. Technical world magazine, v. 12, Oct. 1909: 146–151. illus. T1.T2, v. 12

Extracts, accompanied by different illustrations, appear under the title "A Celestial Wanderer's Return" in the *Literary Digest*, v. 39, Oct. 9, 1909, p. 570–571 (AP2.L58, v. 39).

2488

Raurich, Salvador. Halley's Comet. English mechanic and world of science, v. 90, Dec. 31, 1909, Jan. 14, 1910: 515, 560; v. 91, May 6, June 3, 1910: 310, 401. illus. T1.E5, v. 90–91

Letters to the editor. The first describes three accompanying photographs, taken Dec. 4, 6, and 8 at Barcelona, and a diagram showing the comet's position in Taurus on Dec. 4, 6, 7, and 8. A related letter from William Porthouse appears on the same page. The second letter accompanies a corrected diagram; the third describes and sketches the comet as seen on Apr. 21; and the last includes a description of its appearance on May 21.

2489

Rauscher, Julius. Der Halleysche Komet im Jahre 1531 und die Reformatoren. Zeitschrift für Kirchengeschichte, 32. Bd., Juni 1911: 259–276. BR140.Z4, v. 32

Includes bibliographic references.

What the leaders of the Reformation and their opponents had to say about the comet, as expressed in correspondence and other contemporary records.

2490

Raven-Hill, Leonard. The great amateur. Punch, v. 138, May 25, 1910: 381. illus. AP101.P8, v. 138

Full page drawing shows an aviator viewing Halley's Comet and exclaiming, "Marvellous flier! and does it for love!"

2491

Ravené, Gustave. The appearance of Halley's Comet in A.D. 141. Observatory, v. 20, May 1897: 203–204. QB1.O2, v. 20

2492

Ravenscroft, James. Comet, gas and moonshine. New York American, Apr. 5, 1910: 18. N&CPR

Poem.

Another by the same writer, entitled "A Tale of a Comet's Tail," appears in the May 21 issue, p. 18.

2493

Ray, Joges Chandra. Halley's Comet. English mechanic and world of science, v. 91, July 1, 1910: 497. T1.E5, v. 91

Letter to the editor reporting observations at Cuttack, India, during May. The writer's instruments registered nothing unusual on the day of transit.

2494

Rayl, G. J., K. M. Speight, *and* R. W. Stanhouse. Final report: solar array conceptual design for the Halley's Comet ion drive mission. Prepared for the Jet Propulsion Laboratory, California Institute of Technology. Philadelphia, General Electric Space Division, Valley Forge Space Center, 1977. [87] p. illus. (GE document no. 77SDS4243) (NASA CR–155594) Sci RR

NASA accession no. N78–16438.

Describes two design concepts for a high-power, lightweight solar array suitable for the Halley's Comet ion drive mission.

2495

Raymond, Frederick L. [Halley's Comet] English mechanic and world of science, v. 91, June 3, 1910: 399. T1.E5, v. 91

Letter to the editor reporting observations made at Yeovil on May 23, 24, and 26.

2496

Raymond, William E. Transit of Halley's Comet, 1910 May 19. Observations made at Sydney Observatory. *In* Royal Astronomical Society. Monthly notices, v. 70, supplementary no., 1910: 653. QB1.R7, v. 70

2497

La Reaparición del cometa "Halley" y breves nociones de cometografía. *In* Almanaque del mensajero para el año 1910. Buenos Aires, M. Sundt [1909?] p. 249–252. illus. AY604.A56, 1910

2498

Recalls 1835 comet terror. People thought world would come to an end and prepared for judgment day. Washington post, May 1, 1910, miscellany section: 2. N&CPR

From the *Baltimore Sun*.

John J. Payne, an aged resident of Baltimore, recalls the last visit of Halley's Comet, when the Millerites accepted its appearance as proof that the end of the world was near. He also describes pranks played by youngsters at the time.

2498a

Recent researches into solid bodies and magnetic fields in the solar system. Proceedings of the topical meeting of the COSPAR Interdisciplinary Scientific Commission B and symposium 6 of the COSPAR twenty-fourth

plenary meeting held in Ottawa, Canada, 16 May–2nd June 1982. Edited by J. I. Vette, S. K. Runcorn, E. Grün, and J. A. M. McDonnell. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] 289 p. illus. (Advances in space research, v. 2, no. 12)
QB723 H2R4 1983

Includes bibliographic references.

Sixteen of the 36 constituent papers are separately listed in this bibliography.

2499
Récentes observations de la comète de Halley. *In* Société astronomique de France. Bulletin, 25. année, avril 1911: 183. QB1.S6, v. 25

Made by Barnard at Yerkes on Jan. 8 and by Gonnessiat at Algiers on Feb. 25.

2500
The Recovery of Halley's Comet. Comet news service, Jan. 28, 1983: 1. illus.
DN-Ob

Reproduces the IAU telegram sent Oct. 21 at 08:44 EST as well as the recovery image.

2501
Redding, Cyrus. Halley's Comet. Athenaeum, Sept. 12, 1835: 699.
AP4.A8, 1835

A letter to the editor presenting uninformed speculations about earlier appearances of the comet.

2502
Redécouverte de la comète de Halley (1909 c). Gazette astronomique, 2. année, no 22, 30 sept. 1909: 78–79. QB1.G3, v. 2

See also brief notes on the search for the comet, 1. année, no 1, 4 jan. 1908, p. 10; no 12, 30 nov., p. 98; 2. année, no 14, 26 jan. 1909, p. 13–14, and no 16, 31 mars, p. 29.

2503
Redfearn, Judy. European space: meeting Halley. Nature, v. 285, June 26, 1980: 609. illus. Q1.N2, v. 285

On the flyby mission being considered by the European Space Agency.

2504
Redfearn, Judy. Kamikaze to Halley. Nature, v. 290, Apr. 23, 1981: 621.
Q1.N2, v. 290

With information from the Russian spacecraft, Giotto could be sent to within 200 km of the comet's nucleus.

2505
Reeve, Arthur B. Halley's homing comet. Scrap book, v. 9, Jan. 1910: 103–105. illus. AP2.S32, v. 9

An abridgment, entitled "Halley's Comet," appears in the *Farm Journal*, v. 34, Mar. 1910, p. 147 (S1.F25, v. 34).

2506
Reinhard, Rüdeger. Begegnung mit Komet Halley. Die Umschau, 83. Jahrg., 4. März 1983: 144–149. illus.
Bibliography: p. 149.

2507
Reinhard, Rüdeger. The ESA mission to Comet Halley. *In* Modern observational techniques for comets; proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. (JPL publication 81–68) p. 284–312. illus. DN-Ob
References (6): p. 312.
Includes details of the scientific instruments to be carried by the spacecraft and the experiments they will carry out.

2508
Reinhard, Rüdeger, *and* David Dale. Giotto—a mission to Halley's Comet. *In* European Space Agency. ESA bulletin, no. 24, Nov. 1980: 6–11. illus. TL787.E88a, 1980

2509
Reinhard, Rüdeger. Giotto—a mission to Halley's Comet. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. ix–xix. illus.
NASA accession no. N82–14108.
References (3): p. xix.
"Together with the Soviet 'Venera' and the Japanese 'Planet A' missions to Halley, Giotto will perform the first in-situ measurements at any comet."

2510
Reinhard, Rüdeger. The Giotto mission to Halley's Comet. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982*. Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 21–55. illus.
Discussion: p. 54–55.

2511
Reinhard, Rüdeger. The Giotto mission to Halley's Comet. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 97–107. illus. QB723.H2R4 1983
References (4): p. 107.
Describes the experiments to be carried out, the instruments that will perform them, the spacecraft, and the mission, which "will probably end near the point of closest approach to the nucleus when the spacecraft attitude will be severely perturbed by impacting dust particles leading to a loss of the telecommunications link."

2512
Reinhard, Rüdeger. The Giotto project—a fast fly-by of Halley's Comet. *In* Alpbach Summer School, *1981*. The solar system and its exploration. Papers presented at the Alpbach Summer School held at Alpbach, Austria, 29 July–7 August 1981, organised by ASSA, sponsored by ESA, CNES & DFVLR. [Compiled by W R Burke] Paris, European Space Agency, 1981. (ESA SP–164) p. 221–227. illus.
NASA accession no. N82–26112.

2513
Reinhard, Rüdeger. The Giotto project—a fast flyby of Halley's Comet. *In* European Space Agency. ESA journal, v. 5, no. 4, 1981: 273–285. illus.
TL787.E88c, v. 5
References (3): p. 285.
An outline drawing of the Giotto spacecraft, appearing on p. 277, is also reproduced (without captions) on the cover of the issue.

2514
Reinhard, Rüdeger. The International Comet Mission (ICM). *In* European Space Agency. ESA journal, v. 4, no. 1, 1980: 41–58. illus.
TL787.E88c, v. 4
References (12): p. 58.

2515
Reinhard, Rüdeger. Preliminary design concepts for the Halley probe shield. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979*. Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 7–15. illus.
NASA accession no. N80–22202.
References (4): p. 15.

2516
Rème, H., *and others*. The Copernic experiment to measure three-dimensional electron distribution and the composition of thermal positive ions including water clusters near Comet Halley. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 29–37. illus.
NASA accession no. N82–14112.
References (25): p. 37.

2517
Renaudot, *Mlle*. G. La comète de Halley dans le Talmud. Revue générale des sciences pures et appliquées, 21. année, 15 mars 1910: 177–178.
Q2.R49, v. 21
Reprinted in the *Bulletin* of the Société astronomique de France, 24. année, juin 1910, p. 287–288 (QB1.S6, v. 24). A substantially complete English translation, entitled "Halley's Comet and the Talmud," was published in the *Scientific American Supplement*, v. 69, May 14, 1910, p. 320 (T1.S52, v. 69), and a brief summary, entitled "A Legend of Halley's Comet," is given in the *Observatory*, v. 33, Aug. 1910, p. 335 (QB1.O2, v. 33).

Refers to the Talmudic story of the voyage of two first-century sages, Rabban Gamaliel and Rabbi Joshua. The first provided himself with bread; the second also took some flour, explaining to his companion after the latter had used up his bread before the voyage ended, that a bright star appears every 70 years which confuses the seamen. Since he thought the star might be due, he prepared for a journey that could take longer than usual. Renaudot believes the reappearing star to have been Halley's Comet, and concludes that its periodicity was known to the ancient Hebrews. For an explanation of why this identification is unlikely, see Selig Brodetsky's article, "Astronomy in the Babylonian Talmud," in the *Jewish Review*, v. 2, May 1911, p. 71–73 (AP92.J65, v. 2).

2518
Renaudot, *Mlle*. G. La comète de Halley et le magnétisme planétaire. Revue scientifique, 48. année, 16 avril 1910: 500–501. Q2.R53, v. 48

2519
Renaudot, *Mlle*. G. Nouvelles vues sur la comète de Halley. Revue scientifique, 48. année, 26 mars 1910: 399–401. Q2.R53, v. 48

2520
La Rencontre de la comète. La Nature, 38. année, 14 mai 1910, suppl.: 185. Q2.N2, v. 38.1

On plans to launch balloons into the upper atmosphere during the earth's expected passage through the comet's tail in an attempt to learn something about the material—gaseous or particulate—of which the tail is made.

2521
Rendezvous with Halley's Comet. Spaceflight, v. 24, Sept./Oct. 1982: 369; v. 25, Apr. 1983: 157. illus. TL787.B725, v. 24–25

Describes planned trip to South Africa to view the comet in April 1986. The second article includes a column on plans for earth-based and spacecraft observations.

2521a
Rendezvous with Halley's Comet scheduled for acoustic sensors. Materials evaluation, v. 41, Apr. 1983: 547. illus. TA406.5.N66, v. 41

Sensors made by Dunegan/Endevco of San Juan Capistrano, Calif., will form part of the Dust Impact Detection System project, one of the 10 major experiments to be carried by the Giotto spacecraft.

2522
Repairoux, Alain. Rendez-vous avec Halley. La Recherche, v. 14, fév. 1983: 248–250. col. illus.

References (4): p. 248.

On the Soviet, ESA, and Japanese missions.

2523
[Report of Mr. John Evershed's presentation] *In* British Astronomical Association, *London*. Journal, v. 20, June 1910: 462–464. QB1.B75, v. 20

At a meeting of the Association on June 29, 1910, Evershed "exhibited a large number of slides, including photographs of Halley's Comet and of solar prominences taken at the Kodaikánal Observatory." Comments by members, on his remarks and the slides, appear on p. 464–465.

2524
Retour de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 17 août 1835: 40–41.
Q46.A14, v. 1

Reports Dumouchel's recovery of the comet on Aug. 5, quoting from his letter of the 6th to Eugène Bouvard.

Reprinted in Arago's *Œuvres complètes*, t. 11, p. 481–482 (Paris, Gide, 1859. Q113.A75, v. 11).

2525
Le Retour de la comète de Halley. Ciel et terre, 28. année, 1 sept. 1907: 324.
QB1.C5, v. 28

2526
Le Retour de la comète de Halley. La Nature, 37. année, 25 sept. 1909, suppl.: 129.
Q2.N2, v. 37.2

Reports Wolf's discovery and notes that the comet's appearance at the previously calculated place is yet another brilliant confirmation of Newton's theory of universal gravitation.

2527
Le Retour de la comète de Halley. Revue générale des sciences pures et appliquées, 18. année, 13 juin 1907: 430.
Q2.R49, v. 18

2528
The Return of Halley's Comet. Scientific American, v. 101, Sept. 25, 1909: 208.
T1.S5, v. 101

See "The Comet and the Slander" in *America*, v. 1, Oct. 9, 1909, p. 689 (BX801.A5, v. 1), whose author objects to the assertion that the pope issued a bull against the comet in 1456.

2529
The Return of Halley's Comet. Times (London), Sept. 14, 1909: 11.
N&CPR

2530
Return of the most famous comet in the universe. Current literature, v. 47, Nov. 1909: 558–561. illus.
Micro 05422, reel 700

2531
Reverchon, L. Souvenirs de 1759 à propos de la comète de Halley. Cosmos, t. 62, 4 juin 1910: 621.

Cites articles, letters, and notes by Lalande and Pingré in the avril 1759 issues of *Mémoires pour l'histoire des sciences et beaux-arts*.

2532
Rexroth, Kenneth. Halley's Comet. *In his* In defense of the earth. [New York, New Directions, 1956] p. 19. PS3535.E923I48
Poem.

2533
Reynès, Pierre. Perturbations extra-newtoniennes dans le système solaire; avant-propos sur le système solaire (planètes, satellites et comètes), comète d'Halley, perturbations de translation et de rotation (lune et satellites, Mercure et Mars). Perpignan, Impr. de "l'Indépendant," 1910. 22 p.
Held by the Bibliothèque nationale (Paris) under shelfmark 8° V. Pièce. 17086.

2534
Reynolds, John H. [The Helwan photographs of Halley's Comet] Observatory, v. 34, Apr. 1911: 151–152. DN-Ob
Describes a classification of comets into two kinds, depending on the type of tail, and shows that both types are represented in the Helwan photographs of Halley's Comet. Notes that the type of tail seems to depend on the heliocentric distance of the comet rather than on its size.

2535
Rheden, Joseph. Beobachtungen des Halleyschen Kometen auf dem Sonnwendstein. *In* Vienna. Universität. *Sternwarte.* Annalen der k.k. Universitäts-Sternwarte in Wien. 22. Bd. Wien, J. N. Vernay, 1911. p. [75a]–82a. plate. QB4.V67, v. 22
Observations cover the period Apr. 16–June 10, 1910, and the plate shows sketches of the comet's head made May 20, 24, 26, and 31 by Hartmann and Rheden.

2536
Rheden, Joseph. Photographische Aufnahmen des Halleyschen Kometen und der Kometen des Jahres 1911, ausgeführt am photographischen Refraktor der k.k. Sternwarte in Wien. Mit 9 Tafeln in Autotypie. Wien, Druck von J. N. Vernay [1913] 28 p. plates. (Vienna. Universität. Sternwarte. Annalen der k.k. Universitäts-Sternwarte in Wien, Bd. 23, Nr. 1) QB4.V67, v. 23
"Komet Halley": p. [3]–5. Photographs were taken Apr. 27 and 28, May 22, 23, 24, and 31, and June 3. Plate 1 reproduces pictures taken Apr. 28 and May 23, 24, and 31.
"Photographische Aufnahmen der Sonne während des Vorüberganges des Halleyschen Kometen am Morgen des 19. Mai": p. 5–6.

2537
Riccioli, Giovanni B. Historia cometarum 154. Chronologica & astronomica. Cum euentibus, qui cometis tanquam causis aut signis attribui consueuere ab alijs, potiùs quàm à nobis. *In his* Almagestvm novvm. Pars posterior tomi primi. [Bononiae, Ex typographia Haeredis V. Benatij, MDCLI] p. 3–23. QB41.R4, v. 1.2 Rare Bk. Coll.
Includes brief mentions of the comets of 13 B.C. and A.D. 684, 761, 837, 1066, 1301, and 1456, and gives details of Apian's observations in 1531 (p. 9) and those of Longomontanus and Kepler in 1607 (p. 15–16).

In a separate chapter, "De cometa anni 1607," the author concludes that it may have been a sublunary manifestation.

2538
Riccò, Annibale, *and* Giovanni Zappa. Cometa Halley. Moto della materia della coda. Passaggio della cometa Halley davanti al sole ed incontro della coda colla terra. *In* Annuario scientifico ed industriale. anno 47; 1910. Milano, Fratelli Treves, 1911. p. 33–38. plate.

The plate precedes p. 33.

2539
Riccò, Annibale. Osservazioni astrofisiche della cometa Halley, eseguite nell'osservatorio di Catania. *In* Accademia nazionale dei Lincei, *Rome. Classe di scienze fisiche, matematiche e naturali.* Rendiconti, ser. 5, v. 19, 3 luglio 1910: 3–7. AS222.R63, s. 5, v. 19

A more succinct presentation of the data first published in the *Bollettino delle sedute* of the Accademia Gioenia di scienze naturali in Catania.

2540
Riccò, Annibale. Osservazioni astrofisiche della cometa Halley fatte nel R. Osservatorio di Catania. *In* Accademia Gioenia di scienze naturali in Catania. Bollettino delle sedute, ser. 2, magg. 1910: 7–13; giugno: 2–4. illus. Q54.C32, 1910

Includes tables showing the magnitude of the nucleus at 22 observations during the period Apr. 19–June 2 and tail length on 12 occasions, May 4–June 2. The results of spectroscopic examinations are also given.

2541
Riccò, Annibale. Osservazioni astrofisiche della cometa Halley fatte nel R. Osservatorio di Catania. *In* Società degli spettroscopisti italiani. Memorie, ser. 2, v. 1, luglio 1912: 97–111. plates. QB1.S58, s. 2, v. 1

Bibliographic footnotes.

Gives details of each day's visual and photographic observations during the period Apr. 19–June 2, 1910. There are also sections on the passage of the comet across the sun's disk on May 19 and on the theory of the physical composition of comets.

The plates reproduce Ricco's drawings of the comet on May 7, 8, 12, 13, 14, 18, 21, 24, 25, 26, and 31, and photographs taken by Guido Horn on May 2, 5, 6, 8, 21, and 25, and June 1, 3, and 4, as well as a spectrogram taken May 7.

2542
Rich, Vera. All aboard for Halley. Nature, v. 291, June 18, 1981: 528. Q1.N2, v. 291

"The planned Soviet-French joint mission to Halley's comet in 1986 has been transferred, on the initiative of the Soviet Union, to the joint Comecon 'Interkosmos' programme. At the same time, French participation will be largely reduced to the first stage of the mission, the fly-by of Venus."

2543
Rich, Vera. Franco-Soviet jaunt to Halley? Nature, v. 288, Nov. 6, 1980: 7. Q1.N2, v. 288

2544
Richardson, Robert S. An attempt to determine the mass of Pluto from its disturbing effect on Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 54, Feb. 1942: 19–23. illus. QB1.A4, v. 54

The author's calculations having ruled out Pluto as responsible for delaying the comet's perihelion passage, he proposes a hypothetical 10th planet with a mass equal to that of the earth, moving in an orbit of 35.3 AU radius with an inclination as high as that of the comet.

2545
[Richardson, Robert S.] The blindness [by] Philip Latham [pseud.] *In* Clarke, Arthur C., *ed.* Time probe: the sciences in science fiction. New York, Delacorte Press [1966] p. 167–192. PZ1.C558 Ti

A story, first published in *Astounding Science Fiction*, v. 37, July 1946, p. 84–98, 123–129 (Micro 06740), that describes the return of Halley's Comet in 1987 [sic] and the effects on human life when its close approach damages the earth's ozone layer.

2546
Richardson, Robert S. Can you remember Halley's Comet? *In his* Getting acquainted with comets. New York, McGraw-Hill Book Co. [1967] p. 196–209. illus. QB721.R62

Expansion of an article entitled "Did You See Halley's Comet in 1910?" published in the *Griffith Observer*, v. 25, May 1961, p. 50–54 (QB1.G7, v. 25). The chapter entitled "Comets Across the Sun" includes a section on the 1910 transit of Halley's Comet (p. 176–182); additional references can be traced through the index.

2546a
Richardson, Robert S. Halley and his comet. *In his* The star lovers. New York, Macmillan Co. [1967] p. 77–82. illus. QB35.R5

2547
Richardson, Robert S. How was Halley's Comet discovered? *In his* The fascinating world of astronomy. New York, McGraw-Hill Book Co. [1960] p. [163]–165. illus. QB44.R47

2548
Richardson, Robert S. The return of Halley's Comet; last seen in 1910, the return visit of Halley's Comet should generate new theories, old superstitions and hopefully, more information. Science digest, v. 62, Nov. 1967: 70–75. illus. Q1.S383, v. 62

2549
Richmond, Myrtle L. Observations of Halleys Comet 1909 c. Astronomische Nachrichten, Bd. 191, Nr. 4578, 6. Juni 1912: columns 335–338. QB1.A77, v. 191

Observations made May 30–June 20, 1910, at the Chamberlin Observatory, University Park, Colo.

2550
Ride a comet's tail on wings of the sun. Vectors, v. 21, summer 1979: 10–13. col. illus. Q1.V4, v. 21

On the planned Halley/Tempel 2 mission. A panel from the Bayeux Tapestry is reproduced on the cover of the issue, with an explanatory caption on the verso.

The article is reprinted in *Aerospace*, v. 18, winter 1980, p. 6–9 (TL501.A873A19, v. 18), and, with the illustrations in black and white, in *Space World*, v. P-10-192, Dec. 1979, p. 4–7 (TL787.S72, 1979).

2551

Ridley, Harold B. Brightness of comet P/Halley. *In* British Astronomical Association, *London*. Journal, v. 92, Aug. 1982: 245–246. QB1.B75, v. 92

Report of a talk given by Charles S. Morris at a meeting of the Association's Comet Section, Apr. 3, 1982, in London.

2552

Riegl, Alexander. Der Benndorfsche Potentialregistrator während des Kometendurchganges am 18. und 19. Mai 1910 zu Kalocsa, Haynald-observatorium. Meteorologische Zeitschrift, Bd. 27, Juli 1910: 313–314. QC851.M3, v. 27

2553

Riegl, Alexander. Elektromos mérések a Halley-féle üstökös átvonulásakor. (Május 19-én.) Az Időjárás, 14. évf., 1910. jun.: 180–183. DAS

2554

Riesenberg, Sidney H. See Halley's Comet. Harper's weekly, v. 54, May 21, 1910: 1. col. illus. AP2.H32, v. 54

The full-size cover drawing shows a newsboy peering into the eyepiece of a street telescope; the elderly proprietor stands behind him with a hand on the boy's shoulder.

2555

Rigaud, Stephen P. Some account of Halley's Astronomiae cometicae synopsis, which contains his investigation of the orbits of comets. Oxford, Printed by S. Collingwood, Printer to the University, for J. H. Parker, MDCCCXXXV. 23 p. CtY; N

See also the report of Rigaud's paper on this subject read at a meeting of the Ashmolean Society on Nov. 6, 1835, published in its *Abstracts of the Proceedings*, v. 1, no. 9, 1835, p. 2–3 (QH1.A88, v. 1).

2556

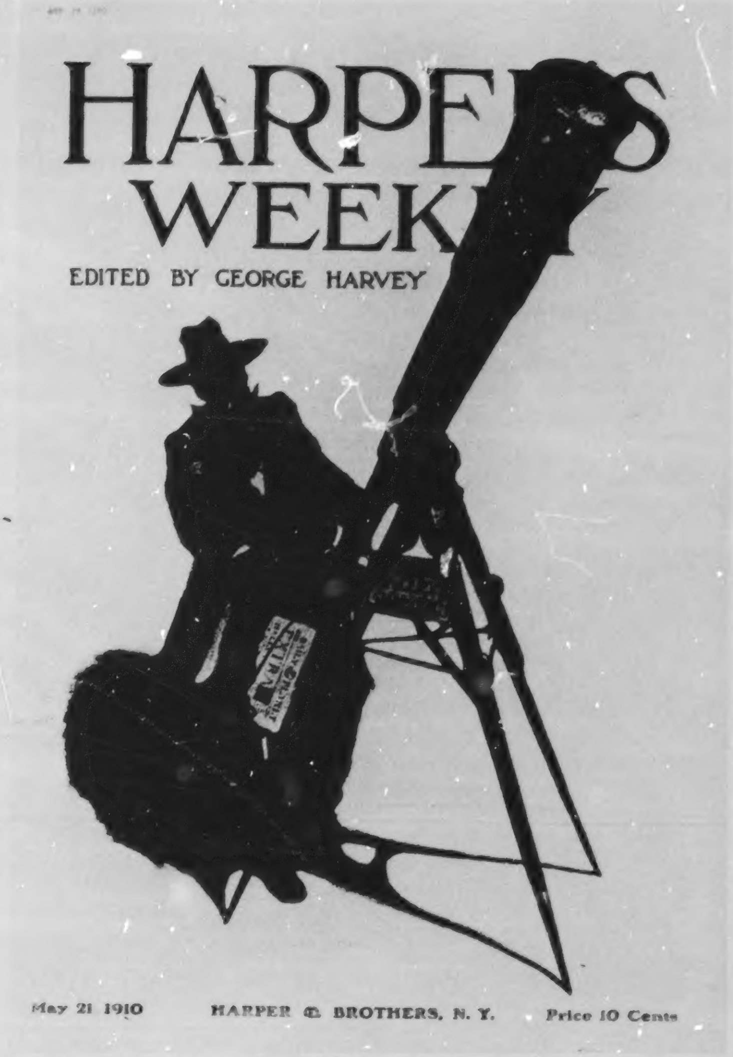
Rigge, William F. The apparent path of Halley's Comet in the sky. Popular astronomy, v. 18, Mar. 1910: 165–169. illus., fold. plate. QB1.P8, v. 18

Illustrations show the comet's orbit relative to the four inner planets as well as its apparent path in the sky.

2557

Rigge, William F. Halley's Comet. America, v. 2, Mar. 12, 1910: 584–585. BX801.A5, v. 2

Includes an extensive quotation concerning the comet's 1835 return from Sir John Herschel's *Outlines of Astronomy*.


HARPER'S
WEEKLY
EDITED BY GEORGE HARVEY
EXTRA
May 21 1910
HARPER & BROTHERS, N. Y.
Price 10 Cents

Using a street telescope, a newsboy glimpses the object that figures in the headlines of the papers he is selling. The artist, Sidney H. Riesenberg, who studied at the Art Institute of Chicago, lived in Westchester County, New York, and contributed illustrations to various national magazines.

2558
Rigge, William F. An historical examination of the connection of Calixtus III with Halley's Comet. Popular astronomy, v. 18, Apr. 1910: 214–219. QB1.P8, v. 18

2559
Rigge, William F. In the tail of Halley's Comet. America, v. 3, Apr. 16, 1910: 7. BX801.A5, v. 3

2560
Rigge, William F. The pope and the comet. Popular astronomy, v. 16, Oct. 1908: 481–483. QB1.P8, v. 16

A comment from John C. Dean appears in the Nov. 1908 issue, p. 587–588, and Rigge's reply, in the Dec. 1908 issue, p. 656.

The full text of the article is reprinted in *Scientific American*, v. 101, Oct. 9, 1909, p. 259 (T1.S5, v. 101).

2561
Rigge, William F. That dreadful tail. America, v. 3, May 7, 1910: 92–93. BX801.A5, v. 3

An inquiry from a reader, and Father Rigge's response, appear in the June 4 issue, p. 216.

2562
Righi, Augusto. Comete ed elettroni. *In* Accademia delle scienze dell'Istituto di Bologna. *Classe di scienze fisiche*. Memorie. ser. 6, t. 7. Supplemento. Adunanza plenaria e pubblica, 22 giugno 1910. Bologna, Tip. Gamberini e Parmeggiani, 1910. p. 10–31. Q54.B6, s. 6, v. 7

References (44): p. 31.

In the last of five sections the author discusses observations made at the time of the near approach of Halley's Comet to the earth in May 1910.

A summary appears in *Scientia, rivista di scienza*, v. 8, no. 4, 1910, p. 269–278, with a French translation by Henry Picquet, "Comètes et électrons," in the *Supplément* to the same volume, p. 146–156 (Q4.S4, v. 8).

—— —— Bologna, N. Zanichelli, 1911. 60 p.

—— Kometen und Elektronen. Deutsch von Max Iklé. Leipzig, Akademische Verlagsgesellschaft, 1911. 64 p.

2563
Riives, V. O velichine ottalkivatelʹnoĭ sily v kometnykh k͡hvostakh I tipa. *In* Tartu. Astronoomia Observatoorium. Publikatsioonid, köide 33, no. 2, 1957: 103–132. illus. QB4.T25, v. 33

English summary.

"Kometa 1910 II Galleı͡a": p. 118–122.

2564
Ristenpart, Friedrich W. El cometa Halley. Conferencia dada en el salon central de la Universidad de Chile ... el lúnes 25 de abril de 1910. Santiago de Chile, Soc. Imp. y Lit. Universo, 1910. 64 p. NN; TxU

—— —— Der Comet Halley. Vortrag, gehalten im Ehrensaal der Universität Santiago de Chile ... am Montag, den 25. April 1910. [Santiago de Chile] Imp. y Lit. Universo-Santiago [1910?] 59 p.

Held by the British Library under shelfmark X.619/2475.

2565
Ristenpart, Friedrich W. Halleyscher Komet 1909 c. Astronomische Nachrichten, Bd. 184, Nr. 4408, 2. Mai 1910: columns 271–272.
QB1.A77, v. 184

Presents an exact time of perihelion calculated by R. Prager on the basis of observations made Apr. 12, 15, and 21.

2566
Robbing comet of its terrors. Our times, v. 26, Mar. 10, 1910: 7.
AP201.O9, v. 26

On the efforts of the Chinese government to prevent the comet's appearance from causing disturbances among the population.

2567
Roberts, Alexander W. Halley's Comet. Chambers's journal, 6th ser., v. 12, Nov. 1909: 710–713. AP4.C45, s. 6, v. 12

A letter from James Findlay commenting on this article was published in the Apr. 1910 issue (p. 255–256).

2568
Roberts, Alexander W. Halley's Comet. Scientific American, v. 101, Aug. 14, 1909: 110. illus. T1.S5, v. 101

Reprinted in *Comets: Readings From Scientific American*, p. [11]–12 (San Francisco, W. H. Freeman [1981] QB721.C65).

2569
Roberts, David L., Francis Narin, *and* P. M. Pierce. Cometary study by means of space missions. *In* Colloque international d'astrophysique, *13th, Liège, 1965*. Nature et origine des cometes; communications présentées au treizième Colloque international d'astrophysique tenu à Liège, les 5, 6 et 7 juillet 1965. Cointe-Sclessin, Belgique, Institut d'astrophysique, 1966. p. 261–279. QB461.C65, 13th

References (9): p. 279.

An intercept mission to Halley's Comet is one of five considered. Discussion appears on p. 294.

2570
Roberts, David L. A survey of comet missions. [Chicago] IIT Research Institute, 1965. 83 p. illus. (Report M–7) Sci RR

NASA accession no. N65-30481.

References (43): p. 70–72.

A mission to Halley's Comet (p. 64–69) is one of five considered.

2571
Roberts, Pelham. [Halley's Comet] English mechanic and world of science, v. 91, June 10, 1910: 425. T1.E5, v. 91

Letter to the editor enclosing a cutting from the *Natal Mercury* of May 13 in which there was a report of a jet seen shooting out of the head of the comet at 5:25 a.m. May 9.

2572
Roberts, Ruel W. How an amateur may find Halley's Comet. Scientific American, v. 102, Jan. 29, 1910: 102, 113–114. illus. T1.S5, v. 102

2573
Roberts, Ruel W. How I found Halley's Comet. Popular astronomy, v. 18, Mar. 1910: 191–192. QB1.P8, v. 18

Reports seeing the comet with a 3½-inch telescope on the night of Nov. 30.

2574
Robertson, Donald F. Requiem for a comet probe. Astronomy, v. 10, Apr. 1982: 26, 28. QB1.A7998, v. 10

Laments NASA's choice of the Venus Orbiting Imaging Radar (VOIR) project in preference to a Halley's Comet mission.

2575
Robinson, W. B. The course of the approaching comet: the relative motions of Halley's Comet and the earth from May 15, 1909, to July 29, 1910. Illustrated London news, v. 135, Sept. 25, 1909: 419. illus. AP4.I3, v. 135

Robinson's drawing is based on a sketch by W. F. Denning.

2576
Rodgers, R. F. Newly-discovered Byzantine records of comets. *In* Royal Astronomical Society of Canada. Journal, v. 46, Sept./Oct. 1952: 177–180. QB1.R485, v. 46

Of the nine descriptions translated into English, one relates to the comet of 1066. References to descriptions of other early comets given at the end of the article include five citations to the comet of 530; two to that of 760; five to that of 912; two to that of 1066; one to that of 1301; and two to that of 1456. According to the author, these references "may be most conveniently found in the 50-volume Bonn collection *Corpus Scriptorum Historiae Byzantinae*" (DF503.C8).

2577
Roeseler, August. Idylle. Fliegende Blätter, 132. Bd., Nro. 3371, [11. März 1910]: 118. illus. AP105.F6, v. 132

Drawing shows an old gentleman in robe and nightcap, seated atop a chimney on a tiled roof which he shares with two cats, looking at the comet through a spyglass. In his left hand he holds a beer tankard; several empties are at his feet. A grinning boy emerges from a window, bringing him a refill.

2578
Röslin, Helisaeus. Historischer, politischer und astronomischer natürlicher Discurs von heutiger Zeit Beschaffenheit, Wesen und Standt der Christenheit, und wie es ins künfftig in derselben ergehn werde, aus Anleitung dero von Anno 1600 her am hohen Himmel erschienenen grossen Wunderzeichen, sonderlichen dess Cometens anno 1607. genommen. Strassburg, Bey C. Scher, 1609. [120] p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 78.

2579
Rogers, Frances. Halley's Comet. *In her* 5000 years of stargazing. Illustrated by Brenda Bettinson. Philadelphia, J. B. Lippincott Co. [1964] p. 84–90. illus. QB15.R6

Admiring the comet through a spyglass, this viewer enjoys his rooftop solitude undisturbed by the cats, while a cheeky youngster brings him yet another tankard of beer. The artist, August Roeseler, studied under Wilhelm von Lindenschmit at the Akademie der Bildenden Künste in Munich and worked in that city as an illustrator and genre painter. From *Fliegende Blätter*, 132. Bd., 11. März 1910, p. 118.

2580
Roĭtman, Dmitriĭ. Galli͡eva kometa, uchenye populi͡arizatory firmy "Mathesis" i drugīe prosvi͡etiteli "suevi͡ernago naroda." Skazka o "t͡sīanistom kali." S.-Peterburg, Izd. Kn-stva "T͡Siennost Zhizni," 1910. 14 p.

2581
Rome (City). Collegio Romano. *Osservatorio.* Osservazioni di pianetini e di comete nel triennio 1907–1909. *In its* Memorie. ser. 3, v. 5, pt. 1. Roma, Tip. dell'Unione editrice, 1910. p. [63]–110. Micro 22430 QB
"Cometa 1909 c (Halley)": p. 109–110. Observations made Nov. 7–Dec. 31, 1909.

2582
Rome (City). Collegio Romano. *Osservatorio.* Osservazioni di pianetini e di comete nel triennio 1910–1912. *In its* Memorie ed osservazioni. ser. 3, v. 6, pt. 1. Roma, Tip. dell'Unione editrice, 1913. p. [1]–32.
Micro 22430 QB
"Cometa 1909 c=Halley": p. 19–24. Observations made Jan. 4–July 6, 1910.

2583
Romero, A. El cometa Halley. Morelia, Tip. Catolica, 1910. 12 p. TxU

2584
Rón, Karel. Kometa Halley-ova. Lidový výklad všech důležitých zjevů této komety se týkajících. V Jevíčku, F. Boháček, 1910. 15 p.

2585
Ronan, Colin A. Halley's Comet. *In his* The practical astronomer. New York, Macmillan Pub. Co. [1981] p. 144–145. illus. (part col.)
QB44.2.R67 1981

2586
Roosen, Robert G., *and* Brian G. Marsden. Observing prospects for Halley's Comet. Sky and telescope, v. 49, June 1975: 363–364. illus.
QB1.S536, v. 49

2587
Rosenberger, Otto A. Berichtigung und Notiz, die Störungen des Halleyschen Kometen betreffend. Astronomische Nachrichten, 12. Bd., Nr. 276, 21. März 1835: columns 187–194. QB1.A77, v. 12

2588
Rosenberger, Otto A. Einige Bemerkungen Störungsrechnungen überhaupt, zunächst aber meine und Herrn Doctor Lehmanns Rechnungen über den Halley'schen Kometen betreffend. Astronomische Nachrichten, 12. Bd., Nr. 288, 26. Aug. 1835: columns 401–408. QB1.A77, v. 12

2589
Rosenberger, Otto A. Elemente des Halleyschen Cometen bei seiner vorletzten Erscheinung im Jahre 1682. Astronomische Nachrichten, 9. Bd., Nr. 196, 18. März 1831: columns 53–68. QB1.A77, v. 9

Based on the observations of Flamsteed, Hevelius, La Hire, and Picard, whose data are included.

2590
Rosenberger, Otto A. Elemente des Halleyschen Kometen bei seiner letzten Sichtbarkeit. Astronomische Nachrichten, 8. Bd., Nr. 180 & Beilage, Mai 1830: columns 221–250. QB1.A77, v. 8

Based on the observations of Messier, Maraldi, Cassini de Thury, Bradley, Hell, Darquier, La Caille, Lulofs, Le Seur, and Jacquier; revised and corrected figures for these observations are provided in tabular form.

2591
Rosenberger, Otto A. Ephemeride des Halleyschen Cometen von Herrn Professor Rosenberger, Director der Sternwarte in Halle berechnet. Astronomische Nachrichten, 13. Bd., Nr. 294, 5. Dec. 1835: columns 95–96. QB1.A77, v. 13

Covers the period Nov. 21, 1835–Feb. 17, 1836.

2592
Rosenberger, Otto A. Ephemeride des Halleyschen Cometen von Herrn Professor Rosenberger mit Zuziehung der Königsberger Beobachtung vom 25sten August (aus der er die Durchgangszeit durch das Perihelium auf Novbr. 16,045 m. Zt. Berlin. bestimmt) aber sonst unveränderten Elementen berechnet. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 317–318. QB1.A77, v. 12

For the period Sept. 14–Oct. 9.

2593
Rosenberger, Otto A. Schreiben des Herrn Professors Rosenberger an den Herausgeber. [Altona, 1836?] [4] p. QB1.A77, v. 13

Ephemeris for Halley's Comet for the period Aug. 18–Nov. 22, 1835. This unpaged circular is bound in *Astronomische Nachrichten*, 13. Bd., between Nr. 299 and the illustrations to Nr. 300/302.

2594
Rosenberger, Otto A. Schreiben des Herrn Professors Rosenberger, Directors der Sternwarte in Halle, an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 281, 1. Juli 1835: columns 277–278; 13. Bd., Nr. 289, 17. Oct.: columns 13–16. QB1.A77, v. 12–13

The first presents two sets of ephemerides based on perihelion dates of Nov. 3 and Nov. 13, and the second, a set based on the date Nov. 16.

2595
Rosenberger, Otto A. Ueber die Störungen des Halleyschen Kometen während seines Umlaufs um die Sonne vom 15ten September 1682 bis zum 13ten März 1759. Astronomische Nachrichten, 11. Bd., Nr. 250, 17. Dec. 1833: columns 157–180. QB1.A77, v. 11

2596
Rosenberger, Otto A. Zwei Schreiben des Herrn Professors Rosenberger an den Herausgeber. Astronomische Nachrichten, 13. Bd., Nr. 293, 28. Nov. 1835: columns 71–72. QB1.A77, v. 13

Further refinements of the comet's orbital elements.

2597

Ross, David. Halley's Comet and others. *In* British Astronomical Association, *London*. Journal, v. 21, Feb. 1911: 240–241. QB1.B75, v. 21

Letter to the editor. The first of two paragraphs briefly describes Halley's Comet as viewed from Melbourne.

Ross was the first observer in Australia to find the comet (see the *Journal*, v. 20, Dec. 1909–Jan. 1910, p. 158–159 and 215).

2598

Rosseter, W. L. Sextant observations of Halley's Comet. *In* Royal Astronomical Society. Monthly notices, v. 70, June 1910: 622. QB1.R7, v. 70

Made May 26 at Lyminge, Kent.

2599

Rost, Richard. Der ängstliche Zar. Jugend, 15. Jahrg., Nr. 6, 1910: 143. illus. Micro 07605

Cartoon shows the Tsar pointing out the window and exclaiming, "Schon wieder eine Bombe!" as a courtier replies, "Nein, Majestät, das ist der Komet!"

Reproduced with English caption in the *Literary Digest*, v. 40, Mar. 19, 1910, p. 536 (AP2.L58, v. 40).

2600

Rostron, T. A. Halley's Comet—meteor. English mechanic and world of science, v. 90, Jan. 21, 1910: 586. T1.E5, v. 90

Letter to the editor reporting observations made at Wigan on Jan. 3, 9, 10, 11, and 12.

2601

Rothman, Richard W. Account of observations of Halley's Comet. *In* Cambridge Philosophical Society. Transactions. v. 6, pt. 3. Cambridge, Printed at the Pitt Press, M.DCCC. XXXVIII. p. [493]–506. Q41.C18, v. 6

"Read December 11, 1837."

Details are given for observations made Sept. 20, 22, 25, 28, and 30, and Oct. 2, 4, 5, 7, 10, 11, 18, 19, 23, and 27, "on the great tower of Trinity College, with a 30-inch achromatic telescope, of $2\frac{3}{4}$ inches aperture, to which was adapted a ring-micrometer."

2602

Rowan, Hill. Comet comedies: preparing for the worst. Newspaper extracts of the next six months. Bystander, v. 25, Mar. 2, 1910: 434. AP4.B97, v. 25

Facetious.

2603

Rowswell, Basil T. Halley's Comet as seen at Guernsey in 1835 and 1910. *In* Société guernesiaise. Transactions of the Guernsey Society of Natural Science and Local Research. v. 6; 1910. Guernsey, Bichard's Print. and Pub. Co. [1911] p. [210]–219. Q41.S6, v. 6

2604
Roy, Félix de. La comète de Halley. Cosmos, t. 62, 11 juin 1910: 650–651.
Discusses reports of observations made during the period May 20–31 when the comet was nearest the earth.

2605
Roy, Félix de. Halley's Comet and "fin du monde"—the Breslau pheomenon—cluster. English mechanic and world of science, v. 91, June 3, 1910: 400–401. T1.E5, v. 91
Letter to the editor describing observations made at Antwerp on May 22 and 26, discussing the matter of responsibility for terrifying the public with tales of possible poisoning by the comet's tail, and translating a report in the *Breslauer Zeitung* of May 21 that two university astronomy students saw part of the comet's tail over much of the sky for about an hour after midnight on the morning of May 20.

2606
Roy, Félix de. Observations et éphéméride de la comète de Halley. Cosmos, t. 61, 23 oct. 1909: 447–448.
Includes an extract for Oct. 7–Dec. 26, 1909, from Crommelin's corrected ephemeris.

2607
Royal Society of London. Journal book. [Extract] June 3, 1696. *In* Halley, Edmond. Correspondence and papers. Arranged and edited by Eugene Fairfield MacPike. Oxford, At the Clarendon Press, 1932. (History of Science Society. Publications, new ser., 2) QB36.H25A3
"Halley produced the Elements of the Calculation of the Motion of the two Comets that appear'd in the Years 1607 and 1682, which are in all respects alike . . . whence he concluded that it was highly probable . . . that these were but one and the same Comet, having a Period of about 75 years . . ."

2608
Rudaux, Lucien. La comète de Halley. La Nature, 38. année, 4 juin 1910: 1–2. illus. Q2.N2, v. 38.2
Comments on the disappointing lack of phenomena on the night of May 18/19. Three drawings by the author show (1) the comet's tail before dawn on May 16, when the head was still below the horizon; (2) the comet as seen with the naked eye on May 23; and (3) the head of the comet as seen with the telescope the same night.

2609
Rudaux, Lucien. Une observation de la queue de la comète, à Donville (Manche), dans la nuit du 15 au 16 mai, entre 2 h. 15 et 2 h. 45. L'Illustration, t. 135, 21 mai 1910: 474. illus. AP20.I3, v. 135
The picture shows the tail of the comet stretching below and beyond the Great Square of Pegasus; at this hour the head was still below the horizon.

2610
Rudaux, Lucien. La queue de la comète de Halley vue à l'aurore, le 16 mai 1910. La comète de Halley dans le ciel du soir au début du juin 1910: la

comète s'en va . . . et ne reviendra qu'en 1986. *In* Berget, Alphonse. Le ciel. Paris, Librairie Larousse [1923] p. 133. illus. QB44.B4

Two drawings, the first of which is very similar to one published in *L'Illustration*, t. 135, 21 mai 1910, p. 474 (AP20.I3, v. 135). On p. 129 of *Le Ciel* is an unsigned sketch comparing the size of the sun with the heads of Halley's Comet (1910) and the comet of 1811, and, on p. 132, a diagram of the orbit of Halley's Comet.

2611

Rudge, William A. D. Abstract of physical observations taken during the proximity of Halley's Comet to the earth. South African journal of science, v. 7, Jan. 1911: 87–91. Q85.S5, v. 7

"Although the results are negative they are of interest as showing that the presence of a comet's tail has no influence on terrestrial phenomena. The question as to whether we actually passed through the comet's tail is, as far as I am aware, not definitely proved."

2612

Rudrauff, Johannes. Gründliche Beschreibung und Erinnerung des newen monstrosischen Sternes, welcher Anno 1607 am hohen himmel geleichtet. [Erfurt, 1607] 31 leaves.

Max Caspar, in his notes to Kepler's *Gesammelte Werke*, Bd. 16 (München, C. H. Beck'sche Verlagsbuchhandlung, MCMLIV. QB3.K3 1937, v. 16), cites a somewhat different title and indicates that the author's name is really Johannes Remus Quietanus.

2613

Rudzki, Maurycy P. Magnetische Störung in der Nacht vom 19. bis 20. Mai. Meteorologische Zeitschrift Bd. 27, Juni 1910: 262. illus. QC851.M3, v. 27

2614

Die Rückkehr des Halleyschen Kometen. Illustrirte Zeitung, 134. Bd., 10. Feb. 1910: 230–231. illus. AP30.I3, v. 134

Signed K.

Includes an ephemeris for Feb. 4–May 30; among the illustrations are the Rudaux diagram and O. J. Lee's photographs taken Sept. 16, 17, 24, and 26, 1909.

2615

Die Rückkehr des Halleyschen Kometen 1910. Sirius, Bd. 39, Nov. 1906: 248–250. DN-Ob

Includes ephemeris, Dec. 21, 1906–Jan. 30, 1910, from Holetschek's paper in the *Sitzungsberichte*, 115. Bd., Abt. 2A, Mai 1906, of the Akademie der Wissenschaften, Vienna, Mathematisch-naturwissenschaftliche Klasse.

2616

Die Rückkunft des Halleyschen Kometen. Illustrirte Zeitung, 133. Bd., 23. Sept. 1909: 596. AP30.I3, v. 133

2617
Rümker, Karl L. C. Beobachtungen des Halleyschen Kometen auf der Hamburger Sternwarte von Herr Rümker. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 315–316. QB1.A77, v. 12
Reports an observation made on Aug. 28. A correction appears in 13. Bd., Nr. 289, 17. Oct., column 16.

2618
Rugbe, Jane. The comet. March. New York, C. Schäfer [1910] 5 p. M28.R
For piano.
Calligraphic cover design includes a stylized comet.

2619
Russell, Henry N. [The finding of Halley's Comet] Scientific American, v. 101, Oct. 30, 1909: 318. T1.S5, v. 101

2620
Russell, Henry N. Halley's Comet at its brightest. Scientific American, v. 102, Apr. 16, 1910: 317–318. illus. T1.S5, v. 102
The cover illustration, by Charles Figaro, shows how the comet will appear in the sky an hour before sunrise on May 2.
Both article and illustration are reprinted in *Comets: Readings From Scientific American*, p. [16]–19 (San Francisco, W. H. Freeman [1981] QB721.C65).

2621
Russell, Henry N. Halley's Comet in the evening sky. Scientific American, v. 102, May 14, 1910: 394. illus. T1.S5, v. 102
The diagram shows the comet's path among the stars, May 20–31.

2622
Russell, Henry N. [How the return of Halley's Comet was predicted] Scientific American, v. 101, Dec. 4, 1909: 414. T1.S5, v. 101

2623
Russell, Henry N. [Observing Halley's Comet] Scientific American, v. 102, Jan. 1, Feb. 5, Mar. 5, Apr. 2, May 7, May 28, 1910: 12, 126, 202, 282, 378, 442; v. 103, July 2: 12. T1.S5, v. 102–103
Remarks of varying length in his monthly sky column.
Excerpts relating to the comet from the columns for May and July (v. 102, p. 378, and v. 103, p. 12) are reprinted in *Comets; Readings From Scientific American*, p. 20–21 and p. 23–24 (QB721.C65).

2624
Rutledge, Archibald. To Halley's Comet. Youth's companion, v. 84, Feb. 3. 1910: 60. AP201.Y8, v. 84
Poem.

2625
Ryan, Charles J. Halley's Comet and the end of the world. Century path, v. 13, Apr. 17, 1910: 2–3. BP500.C4, v. 13
From a theosophical point of view.

2626

Ryves, Percy M. [Halley's Comet] English mechanic and world of science, v. 90, Dec. 10, 1909: 445; v. 91, Feb. 4–11, Apr. 29, 1910: 11, 34, 285.
T1.E5, v. 90–91

Letters to the editor reporting observations made at Zaragoza on Dec. 4; Dec. 4 and 9, 1909, and Jan. 2, 8, 13, and 15, 1910; Jan. 30; and Apr. 17.

2627

Ryves, Percy M. Observations of Halley's Comet. Nature, v. 82, Feb. 10, 1910: 429.
Q1.N2, v. 82

Letter to the editor reporting observations made with binoculars at Zaragoza, Jan. 8–Feb. 3, and estimating its magnitude on Feb. 3 as 8.1.

2628

Sabinus, Georg. Ad Erasmvm Ebnervm Noribergensem, de cometa qui mense Augusto conspectus est, Anno M. D. XXXI. *In his* Poemata. [Argentorati, Apvd C. Mylivm] M. D. XXXVIII. p. [110]–[112]
DFo

2629

Sackett, Lester L., Rolf C. Hastrup, Chen-wan L. Yen, *and* Lincoln J. Wood. Comet rendezvous mission design using solar electric propulsion. *In* AAS/AIAA Astrodynamics Conference, *Provincetown, Mass., 1979.* Astrodynamics 1979; proceedings of the AAS/AIAA Astrodynamics Conference held June 25–27, 1979 in Provincetown, Massachusetts. Edited by Paul Penzo [and others. San Diego, Calif., Univelt, 1980] (Advances in the astronautical sciences, v. 40, pt. 1) p. 343–372. illus.
TL787.A6A2, v. 40, pt. 1

"AAS 79–117."

References (8): p. 372.

"A dual comet (Halley Flyby/Tempel 2 Rendezvous) mission, which is planned to be the first to use the Solar Electric Propulsion System (SEPS), is to be launched in 1985. The purpose of this paper is to describe how the mission design attempts to maximize science return while working within spacecraft and other constraints."

2630

A Sad tale of two comets. Astronomy, v. 8, Feb. 1980: 16–23. illus. (part col.)
QB1.A7998, v. 8

On the proposed NASA mission to comets Halley and Tempel 2.

2631

Sáenz, Jimena. La bendición del cometa. *In her* Entre dos centenarios, 1910–1916. [Buenos Aires] Ediciones La Bastilla [1976] (Memorial de la patria) p. [11]–13.
F2848.S23

The earth's encounter with Halley's Comet in May 1910 coincided with the celebration of the Argentine Republic's centennial.

2632

Sagdeev, Roal'd Z., G. A. Avanesov, A. A. Galeev, V. I. Moroz, B. S. Novikov, *and* Gennadiĭ A. Skuridin. Cometary probe of the Venera-Halley mission. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on

Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 83–90. QB723.H2R4 1983

References (10): p. 90.

Presents details of the objectives of the project and the equipment to be carried by the spacecraft.

2633

Sagdeev, Roal'd Z., S. I. Anisimov, A. A. Galeev, V. D. Shapiro, *and* V. I. Shevchenko. Dust hazard near Halley Comet in case of the VEGA project. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 133–143. illus. QB723.H2R4 1983

References (10): p. 143.

2634

Sagdeev, Roal'd Z., *and others*. On encounter with Comet Halley in 1986 (strategy of studying). Oxford, New York, Published for the International Astronautical Federation by Pergamon Press [1981] 27 p. illus. (IAF-81-200)

AIAA accession no. A81-47402.

Preprint for distribution at the 32d congress of the International Astronautical Federation, Sept. 6–12, 1981, in Rome.

2635

Saget, P. Der Halley'sche Komet und der Weltuntergang. Der Sendbote des göttlichen Herzens Jesu, 37. Jahrg., Mai 1910: 411–413. BX803.S5, v. 37

2636

Sailing to Halley's Comet. Time, v. 109, Mar. 14, 1977: 54. illus. AP2.T37, v. 109

Scientists at the Jet Propulsion Laboratory in Pasadena plan to launch an unmanned spacecraft to rendezvous with the comet in 1986.

2637

Saito, Kuniji, *and* Shizuyo Shinozawa. Meiji 43-nen no Harē suisei ni tsuite no chōsa (sōgō hōkoku). On Halley's Comet 1909c or 1910 II with particular emphasis on the observations made in Japan (collective review). Tōkyō Tenmondai hō, dai 16-kan, Shōwa 49-nen 2-gatsu [Feb. 1974]: 760–906. illus.

"Bunken ichiran": p. 862–906. Includes an extensive listing of published Japanese observations.

2638

Salazar, R. P., A. E. Metzger, Y. C. Wu, *and* J. Malcolm. A study of a central cryogenic cooling system for the comet rendezvous spacecraft. AIAA 16th Thermophysics Conference, June 23–25/Palo Alto, California. New York, American Institute of Aeronautics and Astronautics [1981] 4 p. illus. (AIAA paper 81-1099) Sci RR

References (2): p. 4.

"Several science instruments required temperatures between 100K and 120K on a proposed Halley Flyby, Tempel-2 Rendezvous Mission.

Significant features of the thermal environment are a large variation in heliocentric as well as comet distance, very large solar panels for a Solar Electric Propulsion stage, and the comet dust environment. The best cooling is achieved by one central radiative cooler connected by insulated cryogenic heat pipes to the instruments."

2639
Salisbury, David F. Halley's Comet may still be probed by US, despite NASA budget cuts. Christian Science monitor, v. 74, Dec. 21, 1981: 6. N&CPR

The International Sun-Earth Explorer (ISEE) could be directed to study the comet. "And, best of all to the budget-conscious, the costs would be negligible ..."

2640
Salutation to Halley's Comet. Editorial in the Chicago Inter Ocean of May 18. Public, v. 13, May 27, 1910: 497. AP2.P87, v. 13

Poem. The comet, "Of gases all compounded,/Forever chasing far,/ And yet engaged in doing/Naught in particu-lar" is hailed as the "Roosevelt of the heavens."

2641
Sampson, Ralph A. Halley's Comet and Pope Calixtus. *In* British Astronomical Association, *London.* Journal, v. 19, Mar. 1909: 206. QB1.B75, v. 19

A paper read at a meeting of the Association on Feb. 24, 1909; comments made by members appear on p. 196–197 of the same issue. Sampson discusses the origin of the story that Pope Calixtus ordered prayers to be said to invoke protection against the comet.

2642
San Francisco. Public Library. List of books and articles in the library on Halley's Comet. *In its* Monthly bulletin, v. 16, Apr. 1910: 47–48. Z881.S2M, v. 16

Lists 37 items.

2643
Sandig, Hans U. [J. G. Palitzsch] Die Himmelswelt, 48. Jahrg., März/Apr. 1938: 67–68. port. DN-Ob

Chiefly about Palitzsch's recovery of Halley's Comet at its first predicted return, Dec. 25, 1758. The portrait is the one published in *Das Weltall*, 7. Jahrg., 1. Apr. 1907 (QB1.W4, v. 7).

2644
Santini, Giovanni. Extrait d'une lettre de M. Santini à M. Wartmann, en date de Padoue le 26 mars 1836. Bibliothèque universelle de Genève, nouv. sér., t. 2, mars 1836: 152–153. AP24.B5, n. s., v. 2

Describes observations made between Sept. 1 and Nov. 17 and presents the orbit elements he calculated from the observational data.

2645
Santini, Giovanni. Osservazioni della cometa di Halley fatte nel I.R. Osservatorio di Padova dopo la sua congiunzione col sole nel ritorno al perielio

dell'anno 1835. Astronomische Nachrichten, 13. Bd., Nr. 307, 27. Apr. 1836: columns 303–310. QB1.A77, v. 13

Tabular data and notes on observations made Nov. 17, 1835–Jan. 28, 1836. Data from the preperihelion observations are used to revise the elements of the comet's orbit.

2646

Santini, Giovanni. Osservazioni della cometa di Halley fatte nell'I.R. Specola di Padova, all'equatoriale costruito dal Sr. Utzschneider, nelle vicinanze del suo ritorno all [sic] perielio nell'anno 1835. Astronomische Nachrichten, 13. Bd., Nr. 307, 27. Apr. 1836: columns 297–304. QB1.A77, v. 13

Tabular data and notes on observations made Sept. 1–Nov. 17, 1835.

2647

Santini, Giovanni. Osservazioni della cometa periodica di Halley fatte all'I. R. Osservatorio di Padova verso il suo ritorno al perielio nel novembre 1835, accompagnate da alcune ricerche sull'orbita ellittica della medesima. Annali delle scienze del regno lombardo-veneta, t. 6, luglio/ott. 1836: 186–200.

2648

Santini, Giovanni. Osservazioni della cometa periodica di Halley, fatte nell'Imperiale Regio Osservatorio di Padova nell'anno MDCCCXXXV nelle vicinanze del perielio, seguite da alcune ricerche sulla sua orbita, e precedute da brevi notizie istoriche intorno alla sua teoria. *In* Accademia patavina di scienze, lettere ed arti. Nuovi saggi. v. 4. Padova, Dalla tip. della Minerva, MDCCCXXXVIII. p. 215–242. AS222.P24, v. 4

"Appendice alla precedente memoria intorno alla cometa periodica di Halley": p. 242a–242d.

2649

[Sarcander, Michael] Halley's Wiederkehr. Sterne und Weltraum, 20. Jahrg., Juni/Juli 1981: 222. QB1.S854, v. 20

Expresses the view that the comet will not be comparable with Bennett (1969) or West (1975), and may be difficult to see with the naked eye.

2650

Sargent, John S. Halley's Comet and the scientists. Flaming sword, v. 24, June 1910: 175. BF1995.F3, v. 24

Since no effects were felt when the earth supposedly passed through the comet's tail, nothing was observed when the comet made its transit across the solar disk, and stars were said to be visible through the comet's nucleus, the author states that "these facts go far to prove the assertion of the Koreshan Science of Cosmogony,—that comets are simply aggregations of energy, on their way from the earth to the sun."

2651

Sattler, Wolffgang. De stellae crinitae, sive Cometae illius qui apparuit anno hoc nostro 1607. ad vicesimum sextum septembris, vera generatione, incendio, motu, distantia, magnitudine ac significatione. [Basileae] 1607. [14] leaves.

Held by the Bibliothèque nationale (Paris) under shelfmark V. 8125.

2652
Sauer, Carl G. A comparison of solar sail and ion drive trajectories for a Halley's Comet rendezvous mission. AAS/AIAA Astrodynamics Conference, Jackson, Wyoming/September 7–9, 1977. [New York, American Institute of Aeronautics and Astronautics, 1978] 9 p. illus. (AAS paper 77–4)
AIAA accession no. A78–31903.
References (8): p. 9.

2653
Saunders, T. Bailey. Halley's Comet. Times (London), June 2, 1910: 5. N&CPR
Quotes, in a letter to the editor, passages describing the comet's 1531 appearance from two letters written Aug. 18 and Sept. 9 by Philipp Melanchthon to Joachim Camerarius. The full texts can be seen in the Bretschneider edition of Melanchthon's *Opera Quae Supersunt Omnia*, v. 2, columns 518–519, 537–538 (Halis Saxonum, Apud C. A. Schwetschke, 1835. BR301.C6, v. 2).

2654
Savchenko, V. V. Opredelenie elementov orbity komety Gallei͡a. *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 295, 3 noi͡abr′ 1982: 1. DN-Ob

2655
Savinov, Sergeĭ I. Kometa Gallei͡a. Meteorologicheskiĭ vi͡estnik, t. 20, febr. 1910: 63–64. DAS

2656
Savinov, Sergeĭ I. Nabli͡udenii͡a pri prokhozhdenii komety Gallei͡a. Meteorologicheskiĭ vi͡estnik, t. 20, mart 1910: 94–95. DAS

2657
Savinov, Sergeĭ I. Nabli͡udenii͡a v raznykh stranakh vo vremi͡a prokhozhdenii͡a komety Gallei͡a mezhdu zemleĭ i solnt͡sem v mai͡e 1910 g. Meteorologicheskiĭ vi͡estnik, t. 20, sent./okt. 1910: 296–305. DAS
Bibliographic footnotes.

2658
Sawyer Hogg, Helen. Halley's Comet. *In her* The stars belong to everyone; how to enjoy astronomy. New York, Doubleday, 1976. p. 157–163. illus. QB44.2.S28

2659
Sawyer Hogg, Helen. Halley's Comet and unusual atmospheric phenomena. *In* Royal Astronomical Society of Canada. Journal, v. 59, Apr. 1965: 89–94. QB1.R485, v. 59
References (5): p. 94.
Includes the text of W. J. Humphreys' article, "On Passing Through the Tail of Halley's Comet."

2660
Schaaf, Fred. Dim the lights for Halley's comet. Science 82, v. 3, June 1982: 16. Q1.S354, v. 3

Noting that "At present levels of artificial illumination, Halley's comet will be invisible from most cities and barely perceptible from many suburbs," the author urges a campaign "to press local governments to agree to turn down the lights for at least a short time on key nights when Halley's comet is at its best."

Reprinted in Guy Ottewell's *Astronomical Calendar* for 1983, p. 57.

2661
Schade, Max. Kometen-Walzer. Op. 49. Dresden, 1911.

For orchestra.

2662
Schafer, Edward H. [Halley's Comet] 22 March 837. *In his* Pacing the void: T'ang approaches to the stars. Berkeley, University of California Press [1977] p. 113. QB17.S29

Bibliographic references included in "Notes" (p. 300–301).

Describes the comet and the court's reactions to its appearance, from contemporary sources. Briefer entries on p. 112 document the comet's visits in 684 and 760.

2663
Schaumasse, Alexandre. Observations de comètes, faites à l'observatoire de Nice (équatorial coudé de 0^m,40 d'ouverture). Bulletin astronomique, t. 27, juin 1910: 224–225. QB1.B9, v. 27

Halley's Comet: p. 224. Observations were made during Jan. 3–Mar. 9. Comparison stars are listed on p. 225.

2664
Schaumasse, Alexandre. Observations de comètes, faites à l'observatoire de Nice (équatorial coudé de 0^m,40 d'ouverture). Bulletin astronomique, t. 28, jan. 1911: 8–11. QB1.B9, v. 28

Halley's Comet: p. 8–9, 10–11. Observations were made during Apr. 11–July 7, 1910. Comparison stars are listed on p. 9–10.

2665
Schenmark, Nils. Om den cometens återkomst til vårt planet-systeme, som syntes år 1682. *In* Svenska vetenskapsakademien, *Stockholm*. Handlingar, v. 16, juli/sept. 1755: 216–224. fold. plate. Q64.S8, v. 16

2666
Schiller, Karl. Beobachtungen von Kometen am 29 cm-Äquatoreal der Sternwarte Bothkamp. Astronomische Nachrichten, Bd. 187, Nr. 4472, 8. Feb. 1911: columns 121–126. QB1.A77, v. 187

Includes observations of Halley's Comet made Nov. 18, 1909–Feb. 10, 1910.

2667
Schim, Jan. Aenmerkingen over den loop der staertster, die eerlang verwagt wort, en in 't jaer 1682 verscheenen is. *In* Hollandsche maatschappij der

wetenschappen, *Haarlem*. Verhandelingen. 4. deel. Te Haarlem, By J. Bosch, 1758. p. 490–505. fold. table. Q57.H2, v. 4

2668

Schim, Jan. Vervolg van Aenmerkingen over den loop der staertster, die onlangs verwagt geworden, gezien, en ook in 't jaer 1682 verscheenen is. *In* Hollandsche maatschappij der wetenschappen, *Haarlem*. Verhandelingen. 5. deel. Te Haarlem, By J. Bosch, 1760. p. 405–432. Q57.H2, v. 5

2669

Schleyer, W. Vom Halleyschen Kometen am 19. Mai 1910. *In* Vereinigung von Freunden der Astronomie und kosmischen Physik, *Berlin*. Mitteilungen, 20. Jahrg., Juli 1910: 75–77. DN-Ob

2670

Schmidt, Rudolf, *and* Konrad Schwingschuh. Magnetic field measurements onboard Venera 13, Venera 14 and Venera-Halley. *In* Alpbach Summer School, *1981*. The solar system and its exploration. Papers presented at the Alpbach Summer School held at Alpbach, Austria, 29 July–7 August 1981, organised by ASSA, sponsored by ESA, CNES & DFVLR. [Compiled by W R Burke] Paris, European Space Agency, 1981. (ESA SP–164) p. 245–247.

NASA accession no. N82–26114.

References (5): p. 247.

2671

Schneider, Eberhard. Velocity dependencies of some impact phenomena. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979*. Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 101–107. illus.

NASA accession no. N80–22215.

References (11): p. 107.

2672

Schneider, Otto. Beobachtungen des Halleyschen Kometen 1909 c zur See. Astronomische Nachrichten, Bd. 187, Nr. 4473, 15. Feb. 1911: columns 135–138. QB1.A77, v. 187

Observations made on board the S.S. *Entrerios*, May 20–June 6, 1910.

2673

Schneidewin, Max. Der Halleysche Komet. Natur, 1. Jahrg., 6. Feb. 1910: 157–160. illus.

Reproduces drawings made in 1835.

2674

Schneidewin, Max. Mitteilungen über den Halleyschen Kometen aus den Tropengegenden. Natur, 2. Jahrg., 15. Apr. 1911: 220–221.

Tells of the impressive appearance of the comet in southern skies as reported by observers in Haiti and aboard a ship sailing along the west coast of Africa. (The author's name is given erroneously as Max Schneider.)

2675

Schöner, Johann. Ausslegung Johannis Schoners uber den Cometen so im Augstmonat, des. M.D.XXXj. jars erschinen ist, zu Ehren einem Erbarn Rath, vñ gemeyner Bürgerschafft der Stat Nürmberg, aussgangen. Dressden, Gedruckt durch W. Stöckel [1531] broadside (1 p.) illus.

The small cut shows a comet with a straight tail and a shorter curved one. Captions along three sides orient the comet with respect to east, south, and west.

2676

Schöner, Johann. Coniectur odder ab nemliche auslegung Joannis Schöners uber den Cometen so im Augstmonat, des M. CCCCC. XXXI. Jars erschinen ist, zu Ehren einem Erbern Rath, vnd gemeyner burgerschafft der stat Nurmberg ausgangen. [Leyptzig, Gedruckt durch M. Blum] M.D.XXX.I. [11] p. DSI

A small cut of the comet on the title page has captions indicating its orientation with respect to east, south, and west.

Kurt Pilz, in his *600 Jahre Astronomie in Nürnberg* (Nürnberg, Verlag H. Carl, 1977), ascribes copies of an edition published by F. Peypus in Nuremberg in 1531 to the Bayerische Staatsbibliothek in Munich and the Germanisches Nationalmuseum Bibliothek in Nuremberg.

A cut from the Nuremberg edition is reproduced in *Der astrologische Gedanke in der deutschen Vergangenheit*, p. 74 (München, R. Oldenbourg, 1926), by Heinz A. Strauss.

2677

Schorr, Richard R. E. Halleyscher Komet 1909 c. Astronomische Nachrichten, Bd. 183, Nr. 4374, 4. Dez. 1909: columns 95–96. QB1.A77, v. 183

Observation made Nov. 18 at the Hamburg Observatory.

2678

Schove, Derek Justin. Halley's Comet. I: 1930 B.C. to A.D. 1986. *In* British Astronomical Association, *London*. Journal, v. 65, July 1955: 285–289. QB1.B75, v. 65

References (14): p. 288–289.

2679

Schove, Derek Justin. Halley's Comet and Kamienski's formula. *In* British Astronomical Association, *London*. Journal, v. 66, Mar. 1956: 131–139. illus. QB1.B75, v. 66

References (14): p. 139.

2680

Schrönghamer-Heimdal, Franz. Der Komet. Meggendorfer-Blätter, 80. Bd., 22. März 1910: 234b.

Poem. The writer explains why he believes the comet is particularly apt to bring bad luck to those who write verses about it.

2681

Schroeter, Jens F. W. Halleys komet. Naturen, 34. aarg., jan. 1910: 31–32. illus. Q4.N15, v. 34

Reproduces Wolf's discovery photograph.

2682
Schroeter, Jens F. W. Naar kan Halley's komet ventes? Naturen, 30. aarg., dec. 1906: 353–355. Q4.N15, v. 30

2683
Schrötter, Hermann von. Beobachtungen über das Verhalten der Lichtintensität bei einer am 19. Mai 1910 unternommenen Ballonfahrt. Wiener Luftschiffer-Zeitung, 9. Jahrg., 1. Juli 1910: 240–246. TL503.W5, v. 9
Includes tables of meteorological data.

2684
Schultze, M. J. Unmassgebliches Bedencken über den jetzt in Norden erschienen Cometen. Göttingen, 1682.
Cited in the 1860 Pulkovo catalog, p. 775.

2685
Schulz, Charles M. Peanuts. Washington post, Mar. 6, 1981: C-15. N&CPR
Charlie Brown's sister writes a report on "Halley's comma."

2686
Schumacher, Heinrich C. Beobachtungen des Halleyschen Cometen auf der Altonaer Sternwarte. Astronomische Nachrichten, 13. Bd., Nr. 289, 17. Oct. 1835: columns 7–8. QB1.A77, v. 13
Details of observations made Aug. 31, Sept. 1, and Sept. 14.

2687
Schumacher, Heinrich C. Beobachtungen des Halleyschen Cometen bis zum 30sten August auf der Altonaer Sternwarte. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 311–314. QB1.A77, v. 12

2688
Schwabe, Heinrich. Der Halley'sche Komet. Astronomische Nachrichten, 13. Bd., Nr. 298, 6. Jan. 1836: columns 145–152. plate. QB1.A77, v. 13
Describes the appearance of the comet as observed from Dessau on Oct. 2, 5, 7, 8, 10, 11, 14, 15, 21, 22, 23, 25, 26, and 30, and Nov. 1, 3, 5, 6, and 12. The plate reproduces 20 sketches which are referred to in the text.
Judging from a note in the *Comptes rendus hebdomadaires des séances*, t. 1, 30 nov. 1835, p. 418 (Q46.A14, v. 1), a preliminary version of this report, with sketches made Oct. 7–30, was sent to the Académie des sciences, Paris.

2689
Schwabe, Heinrich. Der Halley'sche Komet. Archiv für die gesammte Naturlehre, 27. Bd., 2./3. Heft, 1835: 297. Q2.A6, v. 27
A paragraph describing changes in the comet's physical characteristics during the period Sept. 15–Nov. 12.

2690
Schwabe, Heinrich. Der Halleysche Komet. *In* Prussia. Allgemeine preussische Staats-Zeitung, 24. Okt. 1835: 1208. J7.G185, 1835
Describes physical changes that he has observed in Dessau during the period Sept. 30–Oct. 12.

2691

Schwarzschild, Karl, *and* Erich Kron. Über die Helligkeitsverteilung im Schweif des Halley'schen Kometen. *In* Akademie der Wissenschaften, *Göttingen. Mathematisch-physikalische Klasse.* Nachrichten, Heft 3, 1911: 197–208. AS182.G822, 1911

An English translation, "On the Distribution of Brightness in the Tail of Halley's Comet," appears in the *Astrophysical Journal*, v. 34, Dec. 1911, p. 342–352 (QB1.A9, v. 34), and an abstract of this, by H. D. Curtis, in the *Publications* of the Astronomical Society of the Pacific, v. 24, Apr. 1912, p. 138–140 (QB1.A4, v. 24).

2692

Schwehm, G. H., *and* B. Kneissel. Optical and physical properties and dynamics of dust grains released by Comet Halley. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP–174) p. 77–84. illus.

NASA accession no. N82–23104.

References (38): p. 83–84.

"New results on the radiation pressure forces on low density and ice coated particles and a discussion of the scattering properties of spherical, irregular and coated dust particles are presented. For the situation of the comet Halley flyby the possible existence and the extent of an icy halo in the coma of the comet is studied. Deriving the temperature distribution and sublimation rate of ice grains two models with pure ice and 'dirty'—ice covered—core-mantle grains are presented."

2693

Schwerd, Friedrich M. [Beobachtung des Halleyschen Cometen] Astronomische Nachrichten, 13. Bd., Nr. 310, 11 Juni 1836: column 360. QB1.A77, v. 13

Brief note of an observation made Oct. 11 at Speyer.

2694

Science news a century ago. [Halley's Comet in 1835] Nature, v. 135, Apr. 6, 1935: 557; v. 136, Aug. 3, Aug. 24, Sept. 28: 195, 310, 525; v. 137, Jan. 25, 1936: 161. Q1.N2, v. 135–137

Contents: Lardner on Halley's Comet.—Reappearance of Halley's Comet.—Halley's Comet seen in England.—Littrow observes Halley's Comet.—Records of Halley's Comet.

2695

Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. [Compiled by B Battrick and J Mort] Paris, European Space Agency, 1981. xix, 135 p. (ESA SP–169) illus.

NASA accession no. N82–14107.

Includes bibliographic references.

Sessions were held on solar wind/comet interaction, cometary dust, composition of the cometary atmosphere, and the comet nucleus.

All but one of the constituent papers are separately listed in this bibliography.

2696

Scientists plan trip to Halley's Comet. New scientist, v. 78, May 18, 1978: 429. illus. Q1.N52, v. 78

"A Solar System Working Group of the European Space Agency (ESA) has recommended that a space probe be launched to intercept Halley's Comet as it passes near the Earth in 1986."

2697

Scomp, Henry A. Halley's Comet and Solomon's Temple. Independent, v. 67, Dec. 2, 1909: 1253–1256. illus. AP2.I53, v. 67

2698

Scott, Samuel. The reappearance [in 1759] of the celebrated Halley's Comet depicted by a painter of the time, Samuel Scott. Evidence for the comet exists as early as 240 B.C. Illustrated London news, v. 235, Oct. 31, 1959, suppl.: II. col. illus. AP4.I3, v. 235

Color reproduction with caption, facing p. 541.

A slightly smaller reproduction appears in Sir Fred Hoyle's *Astronomy*, p. 139 (Garden City, N.Y., Doubleday [1962] QB44.H85), and a much smaller one, in *Galileo; enciclopedia delle scienze e delle techniche*, v. 3, p. 122 ([Firenze, SADEA, 1964] Q121.G3, v. 3). It has also been reproduced on the front cover of *Astronomisk tidsskrift*, årg. 15, dec. 1982.

2699

Seagrave, Frank E. Ephemeris of Halley's Comet. Astronomical journal, v. 26, May 20, Dec. 5, 1910: 104, 170. QB1.A3, v. 26

For the periods June 1–Sept. 1 and Oct. 23–Dec. 6, 1910, and Jan. 3–Apr. 1, 1911.

Seagrave's data for June 1–July 31 and Aug. 4–Dec. 6, 1910, and Jan. 3–Apr. 1, 1911, also appear in *Popular Astronomy*, v. 18, Apr., June/July, and Dec. 1910, p. 241, 372, and 627 (QB1.P8, v. 18), and in the British Astronomical Association's *Journal*, v. 20, Feb., Apr. 1910, p. 273 and 390, and v. 21, Nov. 1910, p. 121 (QB1.B75, v. 20–21).

2700

Seagrave, Frank E. Halley's Comet. Popular astronomy, v. 17, Jan., May 1909: 50, 317. QB1.P8, v. 17

Geocentric positions, Dec. 13, 1908–Jan. 2, 1909, and Aug. 19–Nov. 7, 1909. The latter are reprinted in the *Journal* of the British Astronomical Association, v. 19, May 1909, p. 314 (QB1.B75, v. 19).

2701

Seagrave, Frank E. Halley's Comet; elements based upon observations taken after perihelion passage of April 19.69 = 1910, and ephemeris for next opposition. Astronomical journal, v. 28, Dec. 2, 1913: 71–73. QB1.A3, v. 28

Ephemeris is for the period Feb. 1–21, 1914. "As the comet will be 11.20 units from the Earth next February, I do not think there will be any hope of finding it."

Essentially the same data appear in *Popular Astronomy*, v. 21, Oct.–Nov. 1913, p. 513 and 573 (QB1.P8, v. 21).

2702

Seagrave, Frank E. Halley's Comet, May 18–20. Popular astronomy, v. 18, Aug./Sept. 1910: 431. QB1.P8, v. 18

2703

Seagrave, Frank E. Search ephemeris for Halley's Comet. Popular astronomy, v. 16, Oct. 1908: 509. QB1.P8, v. 16

Covers the period Oct. 19–Nov. 27, 1908. Data for Nov. 19–27 are reprinted in the *Observatory*, v. 31, Nov. 1908, p. 423 (QB1.O2, v. 31), and in the *Journal* of the British Astronomical Association, v. 19, Oct. 1908, p. 42 (QB1.B75, v. 19).

2704

Seaman, *Sir* Owen. To Halley's Comet. (Shortly expected in our neighbourhood.) Punch, v. 137, Sept. 22, 1909: 200. AP101.P8, v. 137

Poem commenting on the sights seen on earth by the comet during past visits.

Reprinted in the *Living Age*, v. 263, Oct. 30, 1909, p. 305 (Micro 32984). Extracts and comments appear in the *Observatory*, v. 32, Oct. 1909, p. 409 (QB1.O2, v. 32).

2705

Search for Halley's Comet stepped up at Kitt Peak. Astronomy, v. 10, Mar. 1982: 69. QB1.A7998, v. 10

2706

Seares, John. The comet, in four parts: I. A concise introduction to astronomy.—II. On comets in general.—III. The principal data of Halley's Comet.—IV. History of that body for two-thousand and forty-one years! Illustrated and explained by tables, diagrams, &c. London, Simpkin, Marshall, 1835. 112 p. QB723.H2S4

2707

Seargent, David A. Halley's Comet—the most famous of them all. *In his* Comets: vagabonds of space. Garden City, N.Y., Doubleday, 1982. p. [161]–182. illus. QB721.4.S4

References (15): p. 181–182.

Includes a summary of the comet's history, details of its 1910 apparition, prospects for the 1986 return, and a consideration of whether the comet is fading.

Halley's Comet is also frequently mentioned elsewhere in the volume (see index).

2708

Searle, George M. Ephemeris of Halley's Comet. Astronomical journal, v. 26, Dec. 22, 1909, Jan. 11, Apr. 25, 1910: 45, 62, 101. QB1.A3, v. 26

For the periods Dec. 21–Jan. 30, Feb. 3–Mar. 5, and Apr. 9–May 27.

Father Searle's ephemerides for Dec. 1–31, Jan. 2–Feb. 1, and Feb. 3–Mar. 5 appear in *Scientific American*, v. 101, Nov. 27, Dec. 18, and Dec. 25, 1909, p. 390, 467, and 486 (T1.S5, v. 101).

2709
Searle, George M. The impending return of Halley's Comet. Catholic world, v. 87, June 1908: 289–297. AP2.C3, v. 87

2710
Searle, George M. Near approach of Halley's Comet to Venus. Popular astronomy, v. 18, Feb. 1910: 114–115. QB1.P8, v. 18

2711
Searle, George M. Present probabilities about the comet. Catholic world, v. 90, Dec. 1909: 289–293. AP2.C3, v. 90

2712
Searle, George M. Probability of a transit of Halley's Comet. Popular astronomy, v. 18, Jan. 1910: 61. QB1.P8, v. 18

2713
Sechste Monatsversammlung. [Die Wiederkehr des Halleyschen Kometen] *In* Verein für Naturkunde in Österreich ob der Enns, *Linz*. 39. Jahresbericht. Linz, 1910. p. 27–28. Q44.L3, v. 39

Most of this report, derived from the local press, on the society's meeting held Mar. 10, 1910, consists of a summary of a talk on the comet given by Prof. Dr. Rudolf Klug.

2714
Sedláček, Hanuš. O kometách, zvláště Halleyově. Lysá n.L., Holub, 1910. 22 p. (Holubův Učitelský rádce, 44)

2715
See, Thomas J. J. The return of Halley's Comet. Munsey's magazine, v. 43, Apr. 1910: 3–12. illus., ports. AP2.M8, v. 43

2716
See, Thomas J. J. What we know about comets. Pacific monthly, v. 23, May 1910: 509–519. illus. AP2.P15, v. 23

Chiefly about Halley's Comet.

2717
Seeing Halley's Comet: a guide for observers in the northern hemisphere. [Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1983] [3] p. illus. (JPL 400–189)

Bibliography: p. [3]
Produced for the Internatonal Halley Watch.

2718
Seeing Halley's Comet: a guide for observers in the southern hemisphere. [Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1983] [3] p. illus. (JPL 400–190)

Bibliography: p. [3]
Produced for the International Halley Watch.

2719
Seidelmann, Paul K., Brian G. Marsden, *and* Henry L. Giclas. Note on Brady's hypothetical trans-Plutonian planet. *In* Astronomical Society of the Pacific. Publications, v. 84, Dec. 1972: 858–864. illus. QB1.A4, v. 84

References (6): p. 864.

Shows that a planet with the mass and orbital elements derived by Brady from the residuals in the times of perihelion passage of Halley's Comet would affect the motions of the planets from Jupiter to Pluto to a degree completely incompatible with observations, and concludes "that the anomalous motion of Halley's comet has some other cause."

2720
Seifert, Jaroslav. Halleyova kometa. *In his* Halleyova kometa, verše. Praha, Albatros [1969] p. 21–22. PG5038.S45H3

Poem.

2721
Sekanina, Zdenek. Dynamical effect of explosive phenomena in Comet Halley and its nuclear rotation. Zeitschrift für Astrophysik, 64. Bd., 6. Heft, 1966: 465–471. illus. QB1.Z4, v. 64

References (8): p. 471.

Studies changes, caused by a nongravitational mechanism, in the daily mean motion and other orbital elements during the comet's 1909–11 apparition, based on the revised orbit published by Zadunaisky in 1966. "The mass loss turns out to be 0.5 per cent of the total mass of the comet ... The sense of rotation of the nucleus is probably retrograde ... To make the theory consistent with observed changes in the elements, however, the axis of rotation must be assumed to deviate considerably from the perpendicular to the plane of orbit, and the mechanism should act asymmetrically with respect to perihelion. Full agreement is reached if the elements are assumed to change suddenly, due to an explosion or a series of successive explosions of solid matter from the nucleus, hereby exerting a push on the comet's nucleus. It should have occured on about May 14 or 15, 1910, coinciding with the time of maximum activity of Comet Halley, confirmed by all the available physical observations."

A Russian translation, "Dinamicheskie effekty vybrosovykh i͡avleniĭ v komete Gallei͡a i vrashchenie ee i͡adra," appears in *Komety, solntse i mezhplanetnoe prostranstvo*, p. 75–[81] ([Kiev] Izd-vo Kievskogo universiteta, 1968. Problemy kosmicheskoĭ fiziky, vyp. 3. QC801.P75, no. 3).

2722
Sekanina, Zdenek. Expected characteristics of large dust particles in periodic Comet Halley. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 25–34. illus.

NASA accession no. N80–22204.

References (30): p. 33–34.

2723
Sekanina, Zdenek. The Halley dust model. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New

York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 121–131. illus. QB723.H2R4 1983

References (69): p. 130–131.

"The properties of dust ejecta from Comet Halley are studied on the basis of (a) evidence from the comet's past apparitions and (b) analogy with recent, physically similar comets. Specifically discussed are the light curve and spectrum, discrete phenomena in the head, the physical properties of the nucleus (size, albedo, rotation, surface temperature, and morphology), and an interaction between the nucleus and dust atmosphere. Also reviewed are constraints on the size and mass distributions of dust particles, information on submicron-size and submillimeter-size grains from the comet's dust tail and antitail, and the apparent existence of more than one particle type. Similarities between the jet patterns of Halley and the parent comet of the Perseid meteor stream are depicted, and effects of the surface heterogeneity (discrete active regions) on the dust flow are assessed. Current dust models for Halley are summarized and the existence of short-term variations in the dust content in the comet's atmosphere is suggested."

—— ——— Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1982. 25 p. illus. (Cometary Science Team preprint series, no. 27)

References (69): p. 16–19.

2724

Sekanina, Zdenek, *and* Vladimír Vanýsek. Irregularities in the motion of Comet Halley in 1910 and its physical behavior. Icarus, v. 7, Sept. 1967: 168–172. illus. QB1.I3, v. 7

References (6): p. 172.

"Anomalous positional residuals from the orbit of Comet Halley, ascertained by Zadunaisky, can be explained by the existence of a spurious nucleus, deviating from the center of gravity of the comet (i.e., from its solid nucleus). It was moving behind the solid nucleus with a relative velocity of the order of a few meters per second. It can be understood as a slightly expanding cloud of micrometeoric grains of 10^{-3} cm in size, of irregular shape."

2725

Sekanina, Zdenek. Non-gravitational effects in comet motions and a model of an arbitrarily rotating comet nucleus. III. Comet Halley. Bulletin of the astronomical institutes of Czechoslovakia, v. 18, no. 5, 1967: 286–296. illus. QB1.B5, v. 18

References (6): p. 296.

2726

Sekanina, Zdenek. Properties of dust particles in Comet Halley from observations made in 1910 during its encounter with the earth. *In* The Comet Halley dust & gas environment. Proceedings of a joint NASA/ESA working group meeting, Heidelberg, 26 and 27 August 1981. Paris, European Space Agency, 1981. (ESA SP-174) p. 55–65. illus.

NASA accession no. N82-23102.

References (26): p. 65.

"Analysis of observations of the dust tail of Comet Halley about the time of the earth's transit across the orbit plane of the comet on May 19, 1910 yields information on particle properties which has so far been inaccessible by other means."

——— ——— Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. 11 p. illus. (Cometary Science Team preprint series, no. 19)

References (26): p. 11.

2727

Selander, Nils H. Halleyska kometen. *In* Berättelse om astronomiens framsteg för åren 1837–1841. Stockholm, P. A. Norstedt, 1842. p. 55–57. QB1.A29, 1837–41

Bibliographic footnotes.

2728

Selga, Miguel. Nota sobre los cometas de los años 1300, 1349, 1362 y 1456. *In* Sociedad Astronómica de España y América. Revista, año 11, marzo/abr. 1921: 29–30. QB1.U65, v. 11

Bibliographic footnotes.

Extracts from chronicles in the library of the Benedictine monastery at Monte Cassino. The 1456 comet was reportedly visible there in May.

2729

Serviss, Garrett P. The coming spectacle in the skies. Hampton's magazine, v. 23, Sept. 1909: 381–388. illus., port. Micro 38615

2730

Serviss, Garrett P. [Halley's Comet] Guide to nature, v. 2, Apr. 1909: 10–11. illus. QH1.G8, v. 2

A small sketch on p. 12 shows the comet as it appeared in 1835.

2731

Seven nations to contribute to Soviet comet observation. Aviation week & space technology, v. 117, July 12, 1982: 72. TL501.A8, v. 117

Countries collaborating with the Soviet Union on experiments or manufacturing equipment for the spacecraft that will visit Halley's Comet are Austria, Bulgaria, Czechoslovakia, France, West Germany, Hungary, and Poland.

2732

Severinski, Nikola. Eine Beobachtung am Abend des 19. Mai 1910. *In* Hrvatsko prirodoslovno društvo. Glasnik, god. 22, druga polovina, 1910: 82–83. illus. Q44.H75, v. 22

The author, in Zagreb, saw an orange-yellow sun pillar about 2° wide and 40° high for 15 minutes after sunset.

2733

Shapiro, Sidney. Two hours in 1986. Astronautics & aeronautics, v. 20, Nov. 1982: 16. TL501.A688A25, v. 20

On the Giotto encounter with Halley's Comet.

2734

Sharma, S. D. Halley's Comet as observed by V. B. Ketakara in 1910 A.D. *In* Astronomical Society of India. Bulletin, v. 6, June 1978: 51. QB1.B45a, v. 6

Abstract of a paper presented at the 4th meeting of the Astronomical Society of India held Mar. 7–10, 1978, at Ootacamund.

2735

Shatraw, Milton E. Christmas and the comet; the remembrance of a season on the high plains. Illus. by Joanne Shatraw Primoff. American West, v. 6, Nov. 1969: 28–33, 62–63. illus. F591.A4, v. 6

2736

Shaw, Percy. The comet. New York American, May 19, 1910: 18. N&CPR

Poem.

2737

Sheetz, William L. The comet. March and two step. Burlington, Iowa, White-Sheetz Co. [1909] 5 p. M28.S

For piano.

Cover design in color.

—— ——— March & two step. [Burlington, Iowa] White-Sheetz Co., 1910. 11 parts. M1350.S

For orchestra.

2738

Sherrill, T. J. Characteristics of space telescope observation of Comet Halley. *In* American Astronomical Society. Bulletin, v. 14, no. 4, 1982: 953. QB1.A255, v. 14

Abstract of a paper presented at the 161st meeting of the Society, Jan. 9–12, 1983, in Boston, Massachusetts.

2739

Shipchinskiĭ, V. V. Nabli͡udenĭi͡a vo vremi͡a prokhozhdenĭi͡a komety Gallei͡a cherez disk solnt͡sa 6 (19) mai͡a 1910 g. v Rossĭi. *In* Leningrad. Glavnai͡a geofizicheskai͡a observatorii͡a. Ezhemi͡esi͡achnyĭ meteorologicheskoĭ bi͡ulleten, g. 18, avg. 1910 g.: 1–2. DAS

2740

Shipchinskiĭ, V. V. Zasi͡edanĭe komissĭi, izbrannoĭ fizicheskim otdi͡elenĭem R.F. KH.O. dli͡a obsuzhdenĭi͡a voprosa o nabli͡udenĭi͡akh vo vremi͡a prokhozhdenĭi͡a komety Gallei͡a cherez disk solnt͡sa, sostoi͡avsheesi͡a 24 marta 1910 g. Meteorologicheskĭĭ vi͡estnik, t. 20, apr. 1910: 131. DAS

2741

Shipley, Maynard. A year of comets. De Vico's 1846 comet possibly due again in 1919. Other comets due this year. Popular astronomy, v. 27, June/July 1919: 437–441. plates. QB1.P8, v. 27

Although Halley's Comet is but briefly mentioned, on p. 438 and p. 440, the accompanying plates reproduce photographs taken June 6, 1910, at Williams Bay, Honolulu, and Beirut, and a spectrogram of the comet's head taken May 5, 1910.

2742

Sicardy, B., J. Guérin, J. Lecacheux, J. Baudrand, Michel Combes, J. P. Picat, G. Lelièvre, *and* J. P. Lemonnier. Astrometry and photometry of comet P/Halley in October and November 1982. Astronomy and astrophysics, v. 121, May (I) 1983: L4–L6. illus. QB1.A83, v. 121

Letter to the editor.

References (9): p. L6.

"Comet P/Halley (1982i) has been observed at the Canada-France-Hawaii 3.6-m Telescope (C.F.H.T.) on October 17th, November 15th and 16th, 1982, using an electronographic camera. Positions were measured with an accuracy of ±1.5 arc sec. The B-magnitude was 24.6±0.4 in November 1982. Data reduction procedures are presented.

"A value of the nuclear radius is derived: $\rho = 3.1^{+3.4}_{-1.6}$ km for an albedo ranging between 0.05 and 0.5."

2743

Siemiątkowski, Feliks. Kometa Halleya w 1910 roku. Lwów, Księg. Polska B. Połonieckiego, 1910. 39 p. illus.

2744

Silbernagel, Emil. Beobachtungen von Kometen am 10½-zölligen Refraktor der Münchener Sternwarte. Astronomische Nachrichten, Bd. 187, Nr. 4468, 26. Jan. 1911: columns 49–54. QB1.A77, v. 187

Includes observations of Halley's Comet made Dec. 4, 1909–June 20, 1910.

2745

Simak, Clifford D. [Halley's Comet] *In his* The solar system: our new front yard. New York, St Martin's Press [1962] p. 262–266. illus. QB501.S5

Includes the author's recollections of seeing the comet as a child.

2746

Simester, B. J. Halley's Comet—solar halos—Gregorian. English mechanic and world of science, v. 91, June 10, 1910: 425. T1.E5, v. 91

Letter to the editor including report of an observation made June 3 at Southampton.

2747

Simon, Seymour. Halley's Comet. *In his* The long journey from space. New York, Crown Publishers [1982] p. [12]–[17] illus. QB721.5.S55 1982

For young readers.

2748

Simonenko, Alla N. Maĭskie Akvaridy i porodivshaîa ikh kometa Galleîa. Priroda, apr. 1969: 125–127. illus. Q4.P8, 1969

2748a

Simonenko, Alla N., *and* P. L. Khotinok. Meteory i kometa Galleîa. Zemlîa i vselennaîa, iîul'/avg. 1983: 66–69. illus. QB1.Z47, 1983

2749
Simonenko, Alla N. Rozhdennyĭ kometoĭ Gallei͡a roĭ meteornykh tel. Priroda, febr. 1983: 28–35. illus. (part col.), port. Q4.P8, 1983

2750
[Simoni, Antonio M.] Brevi considerazioni sopra la cometa apparsa del mese d'agosto 1682, fatte da Asinio Minati Romano [pseud.] In Firenze, Alla Condotta, 1682. [8] p. NN

2751
Simonin, Martial. Observations de comètes et de planètes, faites à l'observatoire de Nice (équatorial Gautier de 0^m,38 d'ouverture). Bulletin astronomique, t. 27, déc. 1910: 466–468. QB1.B9, v. 27

Halley's Comet: p. 466, 468. Observations were made May 21–25. Comparison stars are listed on p. 467.

2752
Singer, Siegfried Fred. Halley's Comet should shower earth with submicron particles. Astronautics & aeronautics, v. 19, Sept. 1981: 60, 74. port. TL501.A688A25, v. 19

"Outfitted with instruments already tested on Explorer 46, the Long Duration Exposure Facility should detect them and shed light on a little-known particle realm."

2753
Sitarski, Grzegorz. Nowe badania ruchu komety Halleya. Postępy astronomii, t. 16, paźdz./grudz. 1968: 358–362. QB1.P835, v. 16

References (5): p. 362.

2754
Sitarski, Grzegorz. Powiązanie czterech pojawień się komety Halleya. Postępy astronomii, t. 20, kwiec./czerw. 1972: 167–169. QB1.P835, v. 20

References (2): p. 169.

2755
Slipher, Vesto M., *and* Carl O. Lampland. Preliminary notes on photographic and spectrographic observations of Halley's Comet. [Flagstaff, Ariz.? 1910?] 252–254 p. (Flagstaff, Ariz. Lowell Observatory. Bulletin, no. 47) QB4.F57, v. 1

"The following notes . . . cover a period from April 14 to May 1, inclusive . . . We shall not at this time attempt to discuss in detail the plates of each day, but shall describe briefly those of certain mornings when the comet showed some unusually interesting features, and cover all as well as may be by a few general remarks."

2756
Slipher, Vesto M. The spectrum of Halley's Comet in 1910 as observed at Lowell Observatory. [Flagstaff, Ariz.? 1911?] 3–16 p. plates. (Flagstaff, Ariz. Lowell Observatory. Bulletin, no. 52) QB4.F57, v. 2

Provides data and descriptions of 91 slit and objective-prism spectrograms made Apr. 15–27 and 29–30, May 1, 3–8, 10–11, 13–15, 20–26, and 28–31, and June 1–2, 5, 8–9, and 24. The plates reproduce some direct photographs of the comet as well as 14 spectrograms.

2757
Slocum, Frederick. Halley's Comet. Popular astronomy, v. 19, May 1911: 282–283. plate. QB1.P8, v. 19

Discusses the question of how much longer the comet can be followed, noting that in 1835 it was seen for about 650 days and that during its 1910 return it had, by the end of Mar. 1911, been observed for about 550 days. The plate (facing p. 261) reproduces a photograph of the comet taken by Slocum with the two-foot reflector of the Yerkes Observatory on Mar. 19, 1911.

2758
Slocum, Frederick. Iridescent clouds and cosmic dust. *In* Royal Astronomical Society of Canada. Journal, v. 28, Apr. 1934: 145–148. plate. QB1.R485, v. 28

Describes unusual clouds observed on May 19, 1910, the day the earth passed through the tail of Halley's Comet.

2759
Slocum, Frederick. Observations of the sun on May 18 and 19, 1910. Astrophysical journal, v. 32, July 1910: 24–25. plates. QB1.A9, v. 32

Photographs were made for comparison with any taken during the predicted transit.

2760
Smart, David. [Ephemeris for Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 19, Dec. 1908, Apr. 1909: 99–100, 259; v. 20, Oct. 1909, Mar. 1910: 51, 326. QB1.B75, v. 19–20

The first two cover the periods Jan. 6–July 25, 1910, and Sept. 11, 1909–Jan. 3, 1910; the others are corrected ephemerides for Apr. 4–May 30 and May 20–31, 1910.

2761
Smart, David. Halley's Comet in 1910. *In* British Astronomical Association, *London*. Journal, v. 19, Jan. 1909: 121–124. illus. QB1.B75, v. 19

A paper read at a meeting of the Association on Dec. 30, 1908; comments made by members appear on p. 113–115.

2762
Smart, David. Halley's Comet: 1910 return. *In* British Astronomical Association, *London*. Journal, v. 12, Jan. 1902: 134–136. illus. DN-Ob

A paper read at a meeting of the Association on Dec. 18, 1901; Crommelin's comments appear on p. 108 of the same issue.

A diagram shows the orbits of the earth and the comet, Jan.–Aug. 1910 (incorrectly marked 1902). There is an approximate ephemeris for the same period.

2763
Smart, David. The orbit of Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 16, Jan. 1906: 105–108. QB1.B75, v. 16

A paper read at a meeting of the Association on Dec. 27, 1905; comments made by members appear on p. 88–89 of the same issue. A supplementary note by the author was published in the February issue, p. 160–161.

2763a

[Smith, David H.] How to switch off a comet. Sky & telescope, v. 66, Oct. 1983: 292–293. illus. QB1.S536, v. 66

More details on the Norris-Ponsonby plan "to use the 250-foot Mark 1A radio telescope at Jodrell Bank to transmit precisely tuned microwave signals at the comet to modify its natural radio emissions." See also item 1474.

2764

Smith, Lucia E. The comet. Sunset, v. 24, Apr. 1910: 371. F851.S95, v. 24

Poem.

2765

Smith, Marcia S. Proposals to send a U.S. spacecraft to Halley's Comet. [Washington, D.C., Congressional Research Service, Library of Congress, 1981] 6 leaves.

"Further reading": leaf 6.

2766

Smyth, William H. [Halley's Comet] *In his* A cycle of celestial objects, for the use of naval, military, and private astronomers. v. 1. Prolegomena. London, J. W. Parker, M.DCCC.XLIV. p. 229–243. illus. QB43.S66, v. 1

See also the remarks and illustrations on p. 89–91 of his *The Cycle of Celestial Objects Continued at the Hartwell Observatory to 1859* (London, Printed for private circulation by J. B. Nichols, M.D.CCC.LX. QB43 .S67).

2767

Smyth, William H. [Letter] from Admiral W. H. Smyth to Mrs. Somerville. *In* Somerville, Mary F. Personal recollections, from early life to old age, of Mary Somerville. With selections from her correspondence. By her daughter, Martha Somerville. Boston, Roberts Bros., 1874. p. 210–211. Q143.S7S7

The first half of the letter, dated Oct. 3, 1835, describes the appearance of Halley's Comet.

2768

Smyth, William H. Observations of Halley's Comet. *In* Royal Astronomical Society. Memoirs. v. 9. London, J. Weale, 1836. p. 229–246. illus., plate. QB1.R5, v. 9

A paper read June 10, 1836. A brief report appears in the Society's *Monthly Notices*, v. 3, June 1836, p. 198–199 (QB1.R7, v. 3). The observations were made at Bedford during the period Aug. 24–Oct. 21, 1835. The plate reproduces sketches of the comet's telescopic appearance on Aug. 28, Sept. 5 and 20, and Oct. 2, 11, and 19.

2769
Snijders, Aarnout J. C. De komeet van Halley en het vergaan der wereld. Amsterdam, Scheltens & Giltay, 1910. 40 p. illus.

2770
Société astronomique et météorologique de Port-au-Prince. Observations de la comète de Halley faites a l'observatoire Saint-Louis, Société astronomique de Port-au-Prince (Haiti). *In its* Bulletin annuel. année 1910. Port-au-Prince, Impr. H. Amblard, 1911. p. [34]-35. QC987.H4S3, 1910

Observational notes cover the period Apr. 15–June 9, 1910.

See also the sketch published in the *Bulletin* of the Société astronomique de France, 24. année, nov. 1910, p. 493 (QB1.S6, v. 24), showing the position of the comet's tail against the constellations on May 10, 14, 18, and 19, as observed by fr. Constantin at Port-au-Prince.

2771
Solar array for Halley's Comet mission. Space world, v. O-1-169, Jan. 1978: 27. illus. TL787.S72, 1978

About "a lightweight, flexible solar array" developed at the General Electric Space Division.

2772
Some notes on Halley's. Comet news service, Apr. 23, 1981: 2. DN-Ob

2773
Somerscales, Anthony N. Halley's Comet. Nautical magazine, v. 83, May 1910: 461–464. illus V1.N25, v. 83

Diagram shows earth's orbit and comet's position at intervals during the period Mar. 16–May 25, 1910.

2774
Somerscales, Anthony N. The return of a notable comet. Nautical magazine, v. 81, Jan. 1909: 39–43. illus. V1.N25, v. 81

2775
[Somerville, Mary F.] [The comet] Quarterly review, v. 55, Dec. 1835: 195–233. AP4.Q2, v. 55

A lengthy essay that includes a good deal of material on comets in general and on individual comets besides Halley's. For information relating to this article, see Mrs. Somerville's *Personal Recollections, From Early Life to Old Age*, p. 100–102 (Boston, Roberts Bros., 1874. Q143.S7S7).

2776
Somerville, Mary F. Halley's Comet. *In her* On the connexion of the physical sciences. 7th ed. London, J. Murray, 1846. p. 383–386. Q158.S69 1846

A sketch of the comet's orbit appears on p. 484.

2777
Sotome, Kiyofusa, *and* Michinao Hoasi. Halley's Comet as observed in Dairen, Manchuria, during the months April–June 1910. Together with photographs taken in the Tokyo Astronomical Observatory, by M. Toda.

Tokyo, 1911. 23 p. plates. (Annales de l'Observatoire astronomique de Tokyo, t. 5, 1. fasc.) DN-Ob; ViU

The Dairen observations were made Apr. 25–June 11, 1910. Twenty plates reproduce 69 photographs taken in Dairen and Tokyo, Apr. 27–June 10, and a photograph of the instruments used at Dairen.

2778

South, *Sir* James. Halley's Comet. Times (London), Aug. 24, 1835: 3; Sept. 1: 6; Sept. 30: 4; Oct. 2: 3; Oct. 6: 3; Oct. 8: 5; Oct. 16: 5; Oct. 19: 3; Oct. 21: 5; Oct. 22: 3; Oct. 26: 5; Oct. 29: 3; Nov. 10: 3; Nov. 30: 5. N&CPR

Letters to the editor describing observations made at his observatory in Kensington and communicating ephemerides and other information to assist readers in locating the comet.

See Also "Sir James South," a letter dated Oct. 22 and signed "Praeceptor," in the Oct. 23 issue, p. 3, describing in some detail visits to the Kensington observatory made by scholars of Christ's Hospital at Sir James' invitation, to view the comet.

2779

South, *Sir* James. Schreiben des Herrn South an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 307–310. QB1.A77, v. 12

In English.

Reports his first observations of the comet made at Kensington on Aug. 22 and 23.

2780

Soviets revise 1984 Venera unmanned mission plan to include 1986 flyby of Halley's Comet. Aviation week & space technology, v. 113, Nov. 10, 1980: 18–19. TL501.A8, v. 113

2781

Sowjets und die ESA zum Kometen Halley. Astronautik, 20. Jahrg., Heft 1, 1983: 19. TL787.A849, v. 20

Signed web.

2782

'Space missions to Halley's Comet and related activities.' The inter-agency meeting in Padova, 13–15 September 1981. *In* European Space Agency. ESA bulletin, no. 29, Feb. 1982: 64–83. illus. TL787.E88a, 1982

Contents: Colombo, G. Welcoming address.—Trendelenburg, E. A. The need for inter-agency collaboration on missions to Halley's Comet.—Reinhard, R. Space missions to Halley's Comet and related activities.

2783

Spencer, Charles J. Halley's Comet. English mechanic and world of science, v. 91, June 10, 1910: 424. illus. T1.E5, v. 91

Letter to the editor describing, and accompanying sketches of, the comet's appearance at Halifax (West Riding) on May 22–23, 25–26, 27, 29, and 31.

2784

Spera, R. J., W. Z. Prickett, J. A. Garate, *and* W. L. Firth. Mission operations for unmanned nuclear electric propulsion outer planet exploration with a thermionic reactor spacecraft. *In* Thermionic Conversion Specialist Conference, *10th, San Diego, 1971.* Conference record; papers presented at the tenth annual conference, San Diego, California, October 4–6, 1971. New York, Institute of Electrical and Electronics Engineers, 1971. p. 13–23. illus. TK2955.T47 1971

References (4): p. 19.

"Mission operations are presented for comet rendezvous and outer planet exploration NEP spacecraft employing in-core thermionic reactors for electric power generation. The selected reference missions are the Comet Halley rendezvous and a Jupiter orbiter at 5.9 planet radii, the orbit of the moon Io . . . Candidate mission operations are defined from spacecraft assembly to mission completion."

A similar report, by Prickett and Spera, *Nuclear Electric Propulsion Mission Operations* (New York, American Institute of Aeronautics and Astronautics, 1972. 14 p. Sci RR), was presented as AIAA Paper no. 72–428 at the AIAA 9th Electric Propulsion Conference, held at Bethesda, Md., Apr. 17–19, 1972.

2785

Sperra, William E. Halley's Comet in three-inch telescope. Popular astronomy, v. 18, Feb., Apr., Aug./Sept. 1910: 116, 243, 427–428. QB1.P8, v. 18

Second and third articles are entitled "Comet Halley." The author reports observations made from the end of Dec. 1909 through the end of June 1910.

2786

Spofford, Harriet P. Expecting company. Christian Endeavor world, v. 24, May 19, 1910: 673. illus. BV1420.C4, v. 24

Poem. The Earth wonders what to wear when the comet comes to visit.

2787

Sporting. Observatory, v. 33, July 1910: 306. QB1.O2, v. 33

Report (copied from the *Ottawa Evening Journal* for May 19) presenting the earth's encounter with Halley's Comet as a boxing match.

2788

Stakeout for Halley's Comet. New York times, v. 131, Aug. 31, 1982: C4. N&CPR

On the International Halley Watch.

2789

Stanton, R. H., *and* Robert W. Armstrong. A CCD tracker for closed-loop instrument pointing at Halley's Comet. AIAA 19th Aerospace Sciences Meeting, January 12–15, 1981/St. Louis, Missouri. New York, American Institute of Aeronautics and Astronautics [1981] 8 p. illus. (AIAA paper 81–88) Sci RR

References (5): p. 8.

Describes "an optical nucleus-tracker based on charge coupled device technology, designed to enable autonomous closed-loop tracking of the comet nucleus."

2790
Stapleton, Marie. "The hairy star." Times (London), June 8, 1934: 10. N&CPR

Letter to the editor recalling the appearance of Halley's Comet as she saw it during the spring of 1910 from her home on a hilltop in central Ceylon.

2791
The Star plate taken at the Royal Observatory, Greenwich, on which Halley's Comet was first perceptible. Knowledge, new ser., v. 6, Nov. 1909: facing p. 410. plate. Q1.K7, n.s., v. 6

The central portion of the same photograph is reproduced in the *Observatory*, v. 32, Nov. 1909, facing p. 411 (QB1.O2, v. 32). It is identified as a 51-minute exposure made Sept. 23 with the 30-inch reflector.

2792
Stebbins, Joel. The brightness of Halley's Comet as measured with a selenium photometer. Astrophysical journal, v. 32, Sept. 1910: 179–182. QB1.A9, v. 32

Includes a table of observations made May 3–June 1 at the University of Illinois observatory.

2793
Stein, Johan. Calixte III et la comète de Halley. Roma, Tip. poliglotta vaticana, 1909. 40 p. (Specola astronomica vaticana. [Pubblicazioni, ser. 2, v. 2, n.] 2) QB4.V42, v. 2, no. 2

Bibliographic footnotes.

Reviewed by Julien Thirion in *Revue des questions scientifiques*, t. 67, jan. 1910, p. 299–303 (Q2.R45, v. 67), and by Guillaume Bigourdan in *Bulletin astronomique*, t. 29, mai 1912, p. 201–202 (QB1.B9, v. 29). A review signed "c." (Vincenzo Cerulli?) appears in *Rivista di astronomia e scienze affini*, anno 4, apr. 1910, p. 191–192 (QB1.S57, v. 4).

An English translation, "Callistus III and Halley's Comet," appears in the *Catholic Mind*, v. 8, 1910, p. 173–220.

2794
Stein, Johan. A newly discovered document on Halley's Comet in 1066. Observatory, v. 33, June 1910: 234–238. QB1.O2, v. 33

Bibliographic footnotes.

Errata were published in the July issue, p. 301. The Italian text, "Un documento inedito del 1066 sulla cometa di Halley," appears in *Rivista di astronomia e scienze affini*, anno 4, giugno 1910, p. 268–274 (QB1.S57, v. 4) and was reprinted in *Miscellanea Astronomica*, v. 1, p. 14–18 (Friburgo i.B., Tip. Herder, 1924), issued by the Specola astronomica vaticana.

2795
Steiner, Lajos. Birkeland. Az Időjárás, 14. évf., 1910. ápr.: 136. DAS

On the Norwegian scientist's plans to travel north to make atmospheric and geomagnetic observations while Halley's Comet is nearest the earth.

2796
Steiner, Simon. A Halley-üstökös. Természettudományi füzetek, 34. évf., 1. füzet, 1910: 2–15.
An address given Feb. 24 at the general meeting of the Délmagyarországi Termésettudományi Társulat (Temesvár).

2797
Steller, K. G. Der Halleysche Komet im Sternenhimmel. Eine Sonderkarte und 2 Hinweiskarten mit Erläuterungen. Nürnberg [1910] 4 p. maps.

2798
Stenquist, David, *and* E. Petri. Earth-current observations in Stockholm during the transit of Halley's Comet on May 19. Nature, v. 84, July 7, 1910: 9. Q1.N2, v. 84
Letter to the editor.

2799
Stenquist, David. The lightphenomena in the atmosphere May 1910. [Uppsala, Almqvist & Wiksells Boktryckeri, 1912] 14 p. illus. (Arkiv för matematik, astronomi och fysik, bd. 7, n:o 36) Q64.S874, v. 7
"Communicated September 27th 1911 by S. Arrhenius and N. Ekholm."
"Though the explication of the perturbations of the atmosphere during the later part of May 1910 must be an open question, it may, however, be not uninterestering [sic] to gather on one place the phenomena observed during the transit of the comet as well immediately after the same, and this is why I have put together observations relative to these phenomena."

2800
Stenquist, David, *and* E. Petri. Observations of earth-currents in Stockholm on May 19, 1910, during passage of Halley's Comet. Terrestrial magnetism and atmospheric electricity, v. 15, Sept. 1910: 159–161. illus. QC811.J6, v. 15

2801
Stentzel, Arthur C. A. M. Das Alter Jesu und der Stern der Weisen. Das Weltall, 7. Jahrg., 15. Jan. 1907: 113–118. QB1.W4, v. 7
Argues that the star seen in the east by the Wise Men was Halley's Comet.

2802
Stentzel, Arthur C. A. M. Jesus Christus und sein Stern. Eine chronologische Untersuchung. 2. Aufl. Mit einem Nachtrag und 22 Tafeln. Hamburg, H. Christian, 1928. [xiv], 274 p. plates. ICU
Bibliographic footnotes.
See particularly "Der Stern der Weisen" (p. 164–211), in which the author presents his arguments for Halley's Comet as the star of Bethlehem, and an appendix, "Die Meteore des Kometen Halley" (p. 250–253).
Copies of the first edition (Hamburg, Verlag der Astronomischen Korrespondenz, 1913. 240 p.) are ascribed to CU and MH.

2803
Stentzel, Arthur C. A. M. Verlauf der Dämmerungserscheinungen während der Kometennähe. Astronomische Korrespondenz, 4. Jahrg., 1910: 104–105.

2804

Stephenson, Bill. The panic over Halley's Comet. Maclean's, v. 68, May 14, 1955: 30–31, 96–101. illus. (part col.), facsims. AP5.M2, v. 68

A comprehensive account of the strange and wonderful behavior provoked by fear of the comet in 1910.

2805

Stewart, Louis B. Halley's Comet. Canadian engineer, v. 18, Apr. 29, 1910: 420–421. illus. TA1.C2, v. 18

The diagram shows the earth's orbit and part of the comet's, with positions marked at intervals between Apr. 1 and July 20.

2806

Stewart, Robert Meldrum. Halley's Comet. *In* Royal Astronomical Society of Canada. Journal, v. 3, Sept./Oct. 1909: 415. fold. illus. QB1.R485, v. 3

Two diagrams show the path of the comet with the positions of Venus, the Earth, Mars, and Jupiter from July 1, 1909, to July 1, 1910, and the apparent path of the comet with respect to the earth and the sun, May 25, 1909–July 1, 1910. On the latter diagram are given the names of stars near which the comet will be seen on indicated dates.

2807

Die Störungen des Halleyschen Kometen. Sirius, 40. Bd., Apr. 1907: 90. DN-Ob

Cites Cowell and Crommelin's paper, "The Perturbations of Halley's Comet," in the Royal Astronomical Society's *Monthly Notices*, v. 67, Jan. 1907, p. 174 (QB1.R7, v. 67).

2808

Stolknovenīe komety Galle͡ia s zemle͡iu 5-go ma͡ia 1910 g. po otzyvam inostrannykh uchenykh. Moskva, Tip. T-va N. L. Koze͡tskago, 1910. 16 p.

2809

Stone, Greg. "A sort of heavenly pollywog." Yankee, v. 37, Dec. 1973: 90–97. illus. (part col.) AP2.Y25, v. 37

"When it was discovered that the earth would pass through the tail of Halley's Comet in 1910 there was a lot of speculation." Describes happenings in New England as recorded in contemporary newspapers, and gives a recipe for a comet cocktail.

2810

Storer, Arthur. [Observations of the comet of 1682] Storer to Newton, 26 April 1683. *In* Newton, *Sir* Isaac. The correspondence of Isaac Newton. v. 2. 1676–1687. Edited by H. W. Turnbull. Cambridge, Published for the Royal Society at the University Press, 1960. p. 387–393. QC16.N7A4, v. 2

"From the original in the University Library, Cambridge." Explanatory notes are provided on p. 393–395.

Includes a small sketch and a table of observations made in Maryland Aug. 14–Sept. 12, 1682.

2811
Storer, Norman Wyman. Variations in the brightness of Halley's Comet (preliminary report). *In* American Astronomical Society. Publications, v. 7, Dec. 1931: 37–38. QB1.A27, v. 7
Abstract of a paper presented at the 46th meeting of the Society, Sept. 7–9, 1931, in Delaware, Ohio.

2812
The Story of Halley's Comet. Boston, Mass., G. P. Ide, 1910. 4 p.
Cited in *Astronomischer Jahresbericht*, 12. Bd., 1910, p. 353; identified as a reprint from *Circle Magazine*, Feb. 1910 (this issue not found).

2813
The Story of Halley's Comet. Griffith observer, v. 3, June 1939: 70–73. illus. QB1.G7, v. 3

2814
Strashnoe poíàvlenīe kornety "Galleīà." Otchego mozhet pogibnut' zemlīà. Moskva, Izd. A. S. Balashova, 1910. xvi p.

2815
Stratford, William S. Ephemeris of Halley's Comet, 1835–6. [London, Nautical Almanac Office, 1835] 10 p.
Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark F 180 (7). This copy was addressed by Stratford to Charles Babbage.
Based on a perihelion date of Nov. 15.93546 GMT, the ephemeris covers the period Aug. 1, 1835–March 31, 1836.

2816
Stratford, William S. A letter from the Superintendent of the Nautical Almanac to the Secretary. *In* Royal Astronomical Society. Monthly notices, v. 3, Dec. 1835: 138–139. QB1.R7, v. 3
Dated Dec. 6, the letter accompanied copies of an ephemeris of Halley's Comet (not reproduced) and invited observers to send him data on their observations for reduction and use in refining the orbit.
See also comments on the author's ephemerides included in the report of the Society's council, presented at the 16th annual general meeting on Feb. 12 and published in the issue of Feb. 1836, p. 162.

2817
Stratford, William S. On the elements of the orbit of Halley's Comet, at its appearance in the years 1835 and 1836. *In* The Nautical almanac and astronomical ephemeris for the year 1839, with an appendix. Published by order of the Lords Commissioners of the Admiralty. London, J. Murray, 1837. Appendix, p. 185–263. QB8.G6, 1839
—— —— Offprint. London, 1837. 81 p. NN; NNC; PPAmP

2818
Strömgren, Elis. Notice regarding Halley's Comet. Copenhagen, Bureau central des télégrammes astronomiques, Union astronomique internationale, 1938. card. ([UAI] Circulaire no 715) DN-Ob

Julie M. Vinter Hansen states that Dr. Jorge Bobone, Observatorio Astronómico, Córdoba, Argentina, "intends to undertake the determination of the definitive orbit of Halley's Comet in its last return 1910."

The announcement also appears in the *Gazette astronomique*, 25. année, mai/juin 1938, p. 49 (QB1.G3, v. 25) and *Astronomische Nachrichten*, Bd. 266, Nr. 6376, 8. Aug. 1938, columns 267–268.

2819

Strong, James. Halley's Comet: a space-age challenge. New scientist, v. 35, Aug. 10, 1967: 286–289. illus. Q1.N52, v. 35

"Although Halley's comet will not return to the Sun's neighbourhood until 1986, if we want to intercept it with a space probe, now is the time to start thinking about it and making plans to track the comet's orbit with great precision."

A letter from Peter Lancaster Brown, commenting on this article, appears in the Sept. 7 issue, p. 510–511.

2820

Stroobant, Paul. [La comète de Halley à son retour de 1910] *In* Brussels. Observatoire royal de Belgique. Annuaire astronomique. 1912. Bruxelles, Hayez, MDCCCCXI. p. 326–391. fold. map, plates. QB9.B8, 1912

An extensive summary of observations collected from many sources. The map shows the comet's path, May 2–16, and that of Venus, May 1–21. A short note on later observations appears in the 1913 *Annuaire*, p. 343–344.

2821

[Strunsky, Simeon] The comet. Nation, v. 90, May 19, 1910: 504–505. AP2.N2, v. 90

Authorship attributed by *Annual Library Index, 1910* (New York, Office of the Publishers' Weekly, 1911).

2822

Struve, Hermann. Beobachtungen des Halleyschen Kometen auf der Königl. Sternwarte zu Berlin. Astronomische Nachrichten, Bd. 188, Nr. 4489, 3. Apr. 1911: columns 5–10. QB1.A77, v. 188

Observations made Dec. 1[illegible], 1909 – June 10, 1910.

2823

Struve, Wilhelm. Beobachtungen des Halleyschen Cometen bei seinem Erscheinen im Jahre 1835 auf der Dorpater Sternwarte. Hrsg. von der Kaiserlichen Akademie der Wissenschaften. St. Petersburg, MDCCCXXXIX. 132 p. plates (part fold. col.) DN-Ob; ICJ; NN

Contents: Abth. 1. Beobachtungen des Cometen am grossen Refractor von Fraunhofer.—Abth. 2. Ortsbestimmungen der Sterne und Reduction der Ortsbestimmungen des Cometen.

Details are provided for observations made Aug. 20, 21, 22, 26, 27, 28, and 31, Sept. 1, 3, 4, 5, 8, 10, 13, 16, 17, 19, 23, 24, 27, and 29, Oct. 1, 3, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 27, and 29, and Nov. 3, 4, 5, 15, and 16.

The plates reproduce drawings of the comet as it appeared on Sept. 29 and Oct. 3, 8, 9, 10, 12, 14, 27, and 29.

2824

Struve, Wilhelm. Beobachtungen des Halley'schen Cometen bei seiner Erscheinung im Jahre 1835 auf der Dorpater Sternwarte angestellt. *In* Akademii͡a nauk SSSR. Bulletin scientifique publié par l'Académie impériale des sciences de Saint-Pétersbourg, t. 3, 27 fév. 1838: columns 352–355. AS262.S335, v. 3

In French. Read Feb. 9, 1838.

2825

Struve, Wilhelm. O Galleevoĭ kometi͡e v 1835 godu. *In* Russia. *Ministerstvo narodnogo prosveshcheni͡a.* Zhurnal, ch. 10, apr. 1836: 23–38. L451.A55, v. 10

Read at a meeting of the Imperial Academy of Sciences, Dec. 29, 1835. A French translation, "Notice sur la comète de Halley en 1835," appears in the *Recueil des actes de la séance publique de l'Académie impériale des sciences de Saint-Pétersbourg, tenue le 29 décembre 1835* (St.-Pétersbourg, 1836), p. [129]–144 (AS262.S363, 1835).

2826

Struve, Wilhelm. Schreiben Sr. Excellenz des Herrn Staatsraths und Ritters v. Struve an den Herausgeber. Astronomische Nachrichten, 12. Bd., Nr. 283, 19. Sept. 1835: columns 319–320. QB1.A77, v. 12

Reports the first sighting of the comet at Dorpat (Tartu). The failure of his attempts to find it at the end of March are briefly mentioned in a letter published in Nr. 280 (20. Mai), column 271.

2827

Struve, Wilhelm. Ueber die im Jahre 1835 auf der dorpater Sternwarte angestellten Beobachtungen des Halleyschen Cometen. Astronomische Nachrichten, 13. Bd., Nr. 303, 2. März 1836: columns 233–240. QB1.A77, v. 13

The comet was observed on 41 days during the period Aug. 20–Nov. 15, and its appearance on about 20 of these occasions is described. Drawings cited in the text are not reproduced here.

2828

Struyck, Nikolaas. Aanmerkingen over den komeet, die in dit jaar 1759 gezien en waargenomen is; waar uit blykt, dat het inderdaad de komeet van 't jaar 1682 is geweest: met eenige byvoegzels omtrent andere komeeten. Uitgezogte verhandelingen uit de nieuwste werken van de societeiten der wetenschappen in Europa, 4. deel, 14. stukje, 1759: 284–296. Q4.U3, v. 4

2829

Sturm, Johann C., *praeses.* Cometarum natura, motus et origo secundùm duas hodie celebriores Joh. Hevelii & P. Petiti celeberrimorum mathematicorum hypotheses ita declarata, ut non solùm novissimi illius nostri, sed insigniorum aliorum quorumque, quos anni 1677, 1665, 1664, 1661, 1652, 1647, 1618, 1607, 1590, 1585, 1580, 1577. & superiores alii viderunt, & historia & naturalis ratio gratâ quadam brevitate exinde dignosci queat. Altdorfi, Typis J. H. Schönnerstaedt, cIↄ Iↄ C LXXXI. 51, [3] p. fold. plates. NN; NNC

Christoph Fürer von Haimendorff, respondent.

The first plate provides comparative sketches of the great comets of 1577, 1618, and 1680, along with the more modest objects of 1607 (Halley's), 1647, 1652, and 1661.

2830

Subbotina, Nina M. Istorīi͡a komety Gallei͡a. S.-Peterburg, Tip. Tov. Obshch. Pol′za, 1910. 158 p. illus.

A review by S. Kostinskiĭ appears in *Izvi͡estīi͡a* Russkago astronomicheskago obshchestva, vyp. 16, sent. 1910, p. 162–165 (QB1.R9, v. 16).

2831

Sulla cometa di Halley. La Civiltà cattolica, anno 61, 4 giugno 1910: 606–612. illus.

Contents: 1. Possibilità d'uno scontro con una cometa. Effetti chimici e meccanici dell'atmosfera terrestre.—2. Posizione reciproca delle orbite della terra e della cometa di Halley.—3. Storia scientifica di questa cometa.—4. Le sue apparizioni antiche. Il documento di Viterbo pel 1066.

2832

Sullivan, Brian. Off on a comet. L-5 news, v. 6, Feb. 1981: 1. illus.

On ESA and Soviet plans to probe Halley's Comet, while NASA has no funds for a Halley mission.

2833

Sur la nouvelle comète. Journal encyclopédique, 15. juil. 1759: 117–123.
AP20.J8, 1759, v. 5

"Extrait de plusieurs lettres sur la nouvelle comète."

2834

Sur le prochain retour de la comète de Halley. Gazette astronomique, l. année, no 2, 4–5, 1 fév., 31 mars–30 avril 1908: 13, 30, 38. QB1.G3, v. 1

2835

Sur le retour de la cométe de 1682, observé en 1759. *In* Académie des sciences, *Paris*. Histoire de l'Académie royale des sciences. Année M. DCCLX. A Paris, De l'Impr. royale, M. DCCLXVI. p. 111–112.
Q46.A13, 1760

2836

Sur le retour de la cométe de 1682, observée en 1759, & sur les différens ouvrages qu'elle a occasionnés. *In* Académie des sciences, *Paris*. Histoire de l'Académie royale des sciences. Année M. DCCLIX. A Paris, De l'Impr. royale, M. DCCLXV. p. 119–164. Q46.A13, 1759

"La prédiction faite par M. Halley en 1705, & qui s'est vérifiée en 1759, est une des choses les plus remarquables que l'Astronomie nous ait jamais offerte . . ."

2837

Svi͡atskiĭ, D. O. Galleeva kometa v Biblīi i Talmudi͡e. Istoriko-astronomicheskoe izsli͡edovanīe. S.-Peterburg, Tip. Stasi͡ulevicha, 1910. 16 p.

2838
Svi͡atskiĭ, D. O. Kometa Gallei͡a v 1066 g. na Kavkaze. Mirovedenie, t. 17, noi͡abr′/dek. 1928: 373. QB1.M5, v. 17
Supplemented by his "Eshche o komete Gallei͡a v 1066 g. na Kavkaze" in t. 18, maĭ/i͡iun′ 1929, p. 214.

2839
Svi͡atskiĭ, D. O. Vstri͡echa komety Gallei͡a s zemlei͡u i poi͡avlenīe novoĭ komety. S.-Peterburg, Tip. M. Stasi͡ulevicha, 1910. 32 p. illus.

2840
Svoboda, Jindřich. Kometa Halleyova. Časopis pro pěstování mathematiky a fysiky, roč. 39, čís. 4, 1910: 426–429. Q4.C2, v. 39

2841
Svoboda, Jindřich. O tvaru meteorického roje komety Halleyovy. [V Praze, Nákl. České Akademie Císaře Františka Josefa pro vědy, slovesnost a umění, 1914] 12 p. illus. (Česká akademie věd a umení, Prague. Třída 2. Rozpravy, roč. 23, 1914, čís. 21) AS142.C43, třída 2, 23
Published in French as "De la figure du courant météorique de la comète de Halley" in the Academy's *Bulletin international*, 19. année, 1914, p. [200]–211 (Prague, Académie des sciences de l'Empereur François Joseph. AS142.C456, v. 19).

2842
Svoboda, Jindřich. Výpočet radiantu roje meteoritů z elementů dráhy komety a důkaz souvislosti Aquarid a Orionid s kometou Halleyovou. [V Praze, Nákl. České Akademie Císaře Františka Josefa pro vědy, slovesnost a umění, 1914] 14 p. illus. (Česká akademie věd a umění, Prague. Třída 2. Rozpravy, roč. 23, 1914, čís. 3) AS142.C43, třída 2, 23
Published in French as "Déduction du point radiant d'étoiles filantes des éléments de l'orbite d'une comète et démonstration de la connexion des Aquarides et Orionides avec la comète de Halley" in the Academy's *Bulletin international*, 19. année, 1914, p. [186]–199 (Prague, Académie des sciences de l'Empereur François Joseph. AS142.C456, v. 19).

2843
Svoboda, Jindřich. Zusammenhang der Aquariden und Orioniden mit dem Halleyschen Kometen. Astronomische Nachrichten, Bd. 197, Nr. 4717, 25. Feb. 1914: columns 203–206. QB1.A77, v. 197

2844
Swartz, Helen M. Observations of Halley's Comet. Popular astronomy, v. 18, Aug./Sept. 1910: 431–432. illus. QB1.P8, v. 18
Describes and sketches the comet's tail as seen at Vassar College Observatory on May 13, 17, and 19.

2845
Swift, Hallock F., Robert Bamford, *and* Ralph Chen. Designing dual-plate meteoroid shields—a new analysis. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1982. 85 p. illus. (JPL publication 82–39) Sci RR

NASA accession no. N82-29351.

References (21): p. 84-85.

Results of the analysis originally "developed during the Comet Halley Intercept Mission (HIM) study for protecting the spacecraft from the intense comet meteoric environment" are here generalized. "Included are also several other studies related to the shield design effort for the HIM vehicle."

2846

Swift, Hallock F. Experimental technology for investigating meteoroid threats to deep space probes. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP-153) p. 131-136. illus.

NASA accession no. N80-22219.

2847

Swift, Hallock F. Protecting the EEC Comet Halley probe from meteoroid impact. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979.* Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP-153) p. 67-72.

NASA accession no. N80-22209.

References (25): p. 72.

2848

Swings, Polydore, *and* L. Haser. Atlas of representative cometary spectra. [Louvain, Impr. Ceuterick, 1956] 37, [46] p. (chiefly illus.) QB780.S9

At head of title: University of Liège. Astrophysical Institute.

"Technical Final Report under Contract AF 61 (514)-628."

Also available on microfiche as AD 119 234.

Includes bibliographic references.

Spectrograms of Halley's Comet are reproduced on plates XIVa (no. 1), XVII (no. 5-8), and XIXb (no. 4).

2849

Symposium on Space Missions to Comets, *Goddard Space Flight Center, 1977.* Space missions to comets. Editors: M. Neugebauer, D. K. Yeomans, J. C. Brandt, R. W. Hobbs. [Washington, D.C.] National Aeronautics and Space Administration, Scientific and Technical Information Branch, 1979. 226 p. illus. (NASA conference publication 2089) QB721.S97 1977

Partial contents: Marsden, Brian G. Comet Halley and history.—Atkins, Kenneth L. Ion propulsion and Comet Halley rendezvous.

"The Symposium ... was originally conceived to provide a broad scientific background for a proposed rendezvous mission to Halley's Comet." Most of the papers treat "different aspects of the scientific return from such a mission."

2850

Szadek, Prokopiades Mikołaj. Judicium et significatio Comete visi Anno domini. 1531. per Magistrū Nicolaū de Szadek diligētissime elaboratū. [Excussum Cracouie per F. Vngleriū, 1531] 9 leaves.

Cited in Estreicher's *Bibliografia polska*, t. 30, p. 183–184; copies are ascribed to the Jagiellonian Library and to the library of the bishopric of Gniezno.

2850a
Székely, Károly. Halley üstököse. Katholikus szemle, 24. köt., 1910. V.: 490–497.

2851
Szeremley, Julius von. Das Schlimmste. Jugend, 15. Jahrg., Nr. 7, 1910: 163. illus. Micro 07605

A cartoon showing two Bavarians who speculate on what evils the comet may portend. One mentions war, conflagration, flood, or epidemic, while the other hints darkly that it may signify an increase in the cost of beer.

2852
TRW Defense and Space Systems Group. *Power Conversion Electronics Dept.* Extended performance electric propulsion power processor design study. Final report. v. 1. Executive summary. [Redondo Beach, CA] 1977. [82] p. illus. (TRW 31526.000) Sci RR

"NASA-CR-135357."

NASA accession no. N78–20250.

"This report summarizes the results of a six month study to define the design, program plan and cost of the electric propulsion power processor for the Halley's Comet Mission Spacecraft."

2853
Tailing a comet: rendezvous in space. Time, v. 114, Dec. 24, 1979: 70. illus. AP2.T37, v. 114

2854
A Tale of the comet. Popular mechanics, v. 14, Aug. 1910: 189. T1.P77, v. 14

Japanese villagers thrashed a shrinekeeper who extorted costly offerings on the pretext that these would induce the deity to preserve them from annihilation by the comet.

2855
Tanaka, Katsumi. Chance encounter. *In* Ninomiya, Takamichi, *and* Dennis J. Enright, *eds.* The poetry of living Japan; an anthology with an introduction. London, J. Murray [1957] (Wisdom of the East series) p. 91. PL884.N5

Reflections evoked by the infrequent return of Halley's Comet.

2855a
Tass, Antal. Halley üstököse földközelben. Uránia (Budapest), 11. évf., 1910. maj.: 231–233. illus.

2856
Tatum, Jeremy B. The altitude of Comet Halley. Observatory, v. 101, June 1981: 84–85. illus. QB1.O2, v. 101

Reference (1): p. 85.

Letter to the editor indicating that observers in northern latitudes will be better placed to see the comet before perihelion. A report on this item, entitled "Northerners *Will* See Halley's Comet," appears in *New Scientist*, v. 90, June 11, 1981, p. 685 (Q1.N52, v. 90). See also "Honnan láthatjuk jól a Halley-üstököst?" in *Élet és tudomány*, 37. évf., 1982. I. 29., p. 158 (Q44.E5, v. 37).

2857

Tatum, Jeremy B. Halley's Comet in 1986. Mercury, v. 11, July/Aug. 1982: 126–131. QB1.M43, v. 11

"... outlines the history of our understanding of this most famous of comets, and predicts those places on Earth from which the comet will be seen best during its next visit in the winter of 1985–86."

The cover of the issue reproduces a photograph of the head and part of the tail of the comet taken May 8, 1910, with the 60-inch telescope at Mount Wilson.

2858

Taxil, Jean. Discovrs des cometes: contenant plusieurs belles & curieuses questions sur ce subiect, & particulierement de celles qu'on a veu au mois de septembre dernier 1607. Auec la prognostication & presages d'icelles. A Lyon, Par C. Morillon, 1608. 139 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 77.

Bibliographic notes in margins.

2859

Taylor, Charles S. Transit of Halley's Comet. Nature, v. 82, Feb. 17, 1910: 458. Q1.N2, v. 82

Letter to the editor pointing out that at the time of the transit the sun will be above the horizon at the North Cape.

2860

Taylor, Eliza B. On Halley's Comet. Our times, v. 26, May 5, 1910: 9. AP201.O9, v. 26

Poem.

2861

Taylor, Thomas G. Halley's Comet. *In* Madras. Observatory. Result of astronomical observations made at the honorable the East India Company's Observatory at Madras. v. 3. For the years 1834 and 1835. Madras, Printed by order of the Madras Govt., MDCCCXXXVI. p. 81–84. DN-Ob

Observations made Aug. 30, 1835–Apr. 3, 1836.

Most of the text (the tables are omitted) is reprinted in the *Madras Journal of Literature and Science*, v. 4, July 1836, p. 164–167 (AS472.M2, v. 4).

2862

Taylor, Thomas G. Observations on the return of Halley's Comet. Madras journal of literature and science, v. 2, Apr. 1835: 164–165. fold. plate. AS472.M2, v. 2

The plate shows a "sketch of the heavens for the latitude of Madras" with the comet's path from Aug. 7 to Oct. 2 indicated.

2863
Taylor, Thomas G. Observations respecting Halley's Comet. Madras journal of literature and science, v. 3, Jan. 1836: 59–62. AS472.M2, v. 3
Includes a comparison of Pontécoulant's elements and those calculated by the author from observations made at Madras.

2864
Taylor, Thomas G. Right ascension and declination of Halley's Comet near to the time of opposition in 1836; from observations made at Madras with the 5-feet transit instrument and 4-feet mural circle. *In* Royal Astronomical Society. Memoirs. v. 10. London, J. Weale, 1838. p. 335. QB1.R5, v. 10
Observations were made Feb. 19–Mar. 21. A summary appears in the Society's *Monthly Notices*, v. 4, May 1837, p. 79–80 (QB1.R7, v. 4).

2865
Tebbutt, John. [Halley's Comet] Observatory, v. 33, Feb. 1910: 107–108. QB1.O2, v. 33
Brief extracts from a letter to the editor.

2866
Tebbutt, John. Note on Halley's Comet. *In* British Astronomical Association, *London*. Journal, v. 20, Jan. 1910: 199–200. QB1.B75, v. 20
Read at a meeting of the New South Wales Branch, Dec. 17, 1909.

2867
Tebbutt, John. Observations of Halley's Comet at Windsor, N.S. Wales. *In* Royal Astronomical Society. Monthly notices, v. 71, Jan. 1911: 224–226. QB1.R7, v. 71
The comet was observed Dec. 3–6, 1909, Jan. 1–2, 1910, and at intervals during May 25–July 1. Corrections of two errors appear in the Apr. 1911 issue, p. 524.

2868
The Telescope that first picked up Halley's Comet. Scientific American, v. 102, May 7, 1910: 380. illus. T1.S5, v. 102
The Heidelberg 28-inch reflector.

2869
Tempesti, Piero. La cometa di Halley. Coelvm, v. 48, mar./apr. 1980: 37–61. illus. DN-Ob

2870
Terentius, *pseud.* Die Kometen. Die Gegenwart, 39. Jahrg., 29. Jan. 1910: 98. AP30.G3, v. 39
Satirical verse.

2871
Terentius, *pseud.* Der versäumte Weltuntergang. Die Gegenwart, 39. Jahrg., 28. Mai 1910: 437. AP30.G3, v. 39
Satirical verse.

2872
Terkán, Lajos. Beiträge zur photographischen Photometrie. c) Die Helligkeitsänderung der Ausstrahlung des Halleyschen Kometen. Astronomische Nachrichten, Bd. 186, Nr. 4448, 21. Okt. 1910: columns 120–122. QB1.A77, v. 186

2873
Terkán, Lajos. A Halley-üstökös kisugárzásának fényességváltozása. Az Időjárás, 14. évf., 1910. jun.: 173–179. illus. DAS

2874
Terkán, Lajos. Halley üstököse szabad szemmel látható. Az Időjárás, 14. évf., 1910. ápr.: 139. DAS

2875
Terkán, Lajos. Halley üstökösének fényessége, láthatósága és fontossága. Az Időjárás, 14. évf., 1910. ápr.: 119–121. DAS

2876
La Terre dans la queue de la comète de Halley. Gazette astronomique, 3. année, no 27/28, 28 [fév.] 1910: 24. QB1.G3, v. 3
Compares calculations by M. l'abbé Moreux published in the *Paris-Journal* with those of Pio Emanuelli appearing in *Gazette astronomique* no 25 of 31 déc. 1909.
See also "La terre et la comète de Halley" in no 29/30, 29 avril 1910, p. 31.

2877
The Terror of many generations photographed: Halley's Comet. Illustrated London news, v. 135, Oct. 9, 1909: 498. illus. AP4.I3, v. 135
The photograph was taken at Greenwich.

2878
"The Terror of the comet." Tablet, v. 115, May 14, 1910: 763–764. AP4.T17, v. 115

2879
Terror of the comet: prayer and fraud in south Russia. Observatory, v. 33, May 1910: 226. QB1.O2, v. 33
Report originating in Odessa and copied from the *Observer* for Apr. 10 on the exploitation of popular fears.

2880
Terry, I. W., *and* Grove T. Barton. The comet. March and two-step. [Lewiston, Idaho, 1910] [3] p. M28.T
Ms. For piano.

2881
Terry, Sara. Will US miss Halley? Christian science monitor, v. 73, June 24, 1981: 1, 6. illus. N&CPR

An interview with Bruce Murray, director of the Jet Propulsion Laboratory.

2882
De Terugkeer der komeet van Halley. Vragen van den dag, 23. jaarg., aug. 1908: 668–670.

Signed C.

2883
Tetens, Otto P. H. Aerologische Beobachtungen während des am 18./19. Mai 1910 erwarteten Durchganges der Erde durch den Schweif des Halleyschen Kometen. *In* Lindenberg, Ger. Aerologisches Observatorium. Ergebnisse der Arbeiten des Königlich Preussischen Aeronautischen Observatoriums bei Lindenberg. 6. Bd.; 1910. Braunschweig, F. Vieweg, 1911. p. [219]–255. illus.

Includes observations of temperature and wind speed and direction made during a number of balloon ascents. Findings were essentially negative.

A brief summary, "Der Halleysche Komet und die Erdatmosphäre," appears in *Jahrbuch der Astronomie und Geophysik*, 23. Jahrg., 1912, p. 48–49 (Leipzig, E. H. Mayer, 1913. Q9.J13, v. 23).

2884
Teucher, A. Palitzsch und der Halleysche Komet. Wissen und Leben, 4. Jahrg., März 1959: 224–226.

2885
Thayer, John H. Halley's Comet, our guide through the beauties and wonders of starland. American boy, v. 11, May 1910: 212, 231. illus., port. AP201.A5, v. 11

2886
Thirion, Julien. La comète de Halley; son histoire et la légende de son excommunication. Revue des questions scientifiques, t. 66, oct. 1909: 670–695. Q2.R45, v. 66

Contents: 1. La découverte de la périodicité de la comète de 1682.—2. Retour de la comète en 1759. Travaux de Clairaut.—3. Les apparitions antérieures à 1531; la légende de l'excommunication.—4. Retour de la comète de Halley en 1835 et en 1910.

Bibliographic footnotes.

2887
Thompson, Hans. A trip to the comet. Polka redowa. Clinton, Iowa, H. Thompson, 1910. 11 parts. Mus

For orchestra.

2888
Thomson, Arthur. On a variation in the intensity of the penetrating radiation at the earth's surface observed during the passage of Halley's Comet. *In*

Royal Society of Canada. Proceedings and transactions. ser. 3, v. 4; meeting of September, 1910. Section III. Mathematical, physical and chemical sciences. Ottawa, J. Hope, 1911. p. 61–65. illus. AS42.R6, s. 3, v. 4

Bibliographic footnotes.

—— ——— Reprint. [Toronto] University Library; published by the librarian, 1911. 5 p. illus. (University of Toronto studies. Papers from the physical laboratories, no. 37) QC1.T66, no. 37

A slightly different version with the same title, presented on Dec. 30, 1910, at the Minneapolis meeting of the American Physical Society, was published in the *Physical Review*, v. 32, Mar. 1911, p. 343–347 (QC1.P4, v. 32), and in *Terrestrial Magnetism and Atmospheric Electricity*, v. 16, Mar. 1911, p. 25–30 (QC811.J6, v. 16).

2889

Thomson, Harold. [Notes on Halley's Comet] *In* British Astronomical Association, *London*. Journal, v. 20, June 1910: 507. QB1.B75, v. 20

Observations made May 18–21 at Rio de Janeiro. Thomson's observations made aboard the R.M.S. *Asturias* en route to Rio, Apr. 23–May 12, are incorporated in a combined report in the May issue, p. 444–447, and a sketch he made on May 1 appears on p. 448. See also his remarks in v. 22, Jan. 1912, p. 182.

2890

Thorndike, Lynn. Some tracts on comets, 1456–1500. Archives internationales d'histoire des sciences, 11. année, juil./sept. 1958: 225–250. Q1.A67, v. 11

Bibliographic footnotes.

Includes discussion (p. 225–233) of several manuscripts dealing with the comet of 1456. See also the first part of chapter 57, "Comets and Courts," in the author's *A History of Magic and Experimental Science*, v. 4 (New York, Columbia University Press, 1934. Q125.T52, v. 4).

2891

Thornton, Catherine L., *and* Robert A. Jacobson. Navigation capability for an ion drive rendezvous with Halley's Comet. Journal of the astronautical sciences, v. 26, July/Sept. 1978: 197–210. illus. TL787.A6A3, v. 26

References (16): p. 209–210.

"Navigation accuracies are presented for a 1985 rendezvous with Halley's Comet using an ion propulsion system. Individual error sources are examined to determine their relative contributions to final delivery errors. The sensitivity of delivery accuracy to stochastic thrust variations is demonstrated by considering a baseline thrust error model and a more benign alternative model. Also studied are the effects of increased comet ephemeris uncertainties and of operational time delays between the orbit determination process and the guidance implementation."

2892

Three shuttle missions to obtain Halley's Comet data. Aerospace daily, v. 115, June 15, 1982: 246. HD9711.5.U58A33, v. 115

Ultraviolet telescopes will observe the comet in November 1985, March 1986, and May or June 1986.

A very short preliminary announcement appears in the June 14 issue under the title "Halley's Observer."

2893
Through the tail? The encounter with Halley's Comet, 1910. Comet news service, Oct. 24, 1975: 2–3. facsims. DN-Ob

2894
Time of the expected comet's perihelion calculated. Gentleman's magazine, v. 29, Feb. 1759: 52–54. AP4.G3, v. 29 Rare Bk. Coll.

Reports on the work of Clairaut.

Published also in the *Scots Magazine*, v. 21, Feb. 1759, p. 86–88 (AP3.S35, v. 21).

2895
To the comet. Mirror of literature, amusement, and instruction, v. 26, Oct. 17, 1835: 242–243. AP4.M5, v. 26

Poem, signed A. C. R.

2896
To the comet. Sunday times (London), Apr.17, 1910: 10. N&CPR

Poem signed F. J. C. on the ascription of every kind of misfortune to the comet.

Another poem by the same writer, entitled "The Passing of the Comet," appears in the issue of May 22, p. 8.

2897
To the departed comet. American monthly magazine, new ser., v. 1, Jan. 1836: 97–99. AP2.A379, n.s., v. 1

Poem.

2898
Todd, David P. Halley and his comet. *In his* The story of the starry universe. Rev. by John E. Merrill. New York, P. F. Collier [1939] (Popular science library) p. 83–89. QB44.T64 1939

First published in 1922.

In Donald H. Menzel's revision, this article appears on p. 71–77 in the 1941, 1943, 1948, and 1954 editions.

2899
Todd, David P. Halley's Comet. New York, American Book Co., 1910. 23, 392–411 p. illus., ports. QB723.H2T6

Contents: Halley the comet.—Halley the man.

"Books on Comets": p. 23.

"Comets and Meteors," chapter 15 of the author's *A New Astronomy* (1906), forms the second part of the pamphlet.

2900
Todd, Mabel L. Halley's Comet. *In* The American year book, a record of events and progress. 1910. New York, D. Appleton, 1911. p. 559–560. E171.A585, 1910

2901
Todd, William G. Saw Halley's Comet in 1835. Popular astronomy, v. 18, Feb. 1910: 127–128. port. QB1.P8, v. 18

Recalls seeing the comet when he was 14 years old.

2902
Tōkyō Daigaku. *Uchū kōkū kenkyūjo.* Plan for Planet-A satellite. Translation of "Planet-A keikaku". Tokyo University Space Research Laboratory, Tokyo, Japan, Report (1980?) pp. 1–6. Washington, D.C., National Aeronautics and Space Agency, 1980. 9 p. illus. (NASA TM 76456) Sci RR

NASA accession no. N81–18079.

Describes the plan for the spacecraft that will be launched by Japan in Jan. 1985 to observe Halley's Comet. In addition to making ultraviolet observations of Venus and the comet, it will study the interplanetary magnetic field and the solar wind.

2903
Tōkyō Daigaku. *Uchū kōkū kenkyūjo.* Planet-A. Japanese first interplanetary flight. Status report. 2d ed. [Tokyo?] Institute of Space and Astronautical Science, 1982. 52 p. illus. (SES-TD–82–014)

NASA accession no. N83–12110.

2904
Touchet, Émile. Autres observations des membres et correspondants de la société. *In* Société astronomique de France. Bulletin, 24. année, juil.–sept. 1910: 325–333, 371–374, 397–405. illus. QB1.S6, v. 24

A collection of many brief reports of observations of Halley's Comet made not only in various parts of France but also elsewhere in Europe, and in Africa, the Middle East, the Caribbean, and South America. The nov. 1910 issue, p. 492–494, contains a supplementary collection, "La Comète de Halley: observations des membres et correspondants de la société," and a few additional observations are given in the proceedings of the society's meetings published in 25. année, jan.–mars, juin–juil. 1911, p. 44, 93, 140, 279–280, and 330 (the last including an illustration).

2905
Touchet, Émile. La comète de Halley. La Nature, 37. année, 2. semestre, 9 oct. 1909, suppl.: 150; 38. année, 1. semestre, 15 jan., 9 avril 1910, suppl.: 54, 150; 2. semestre, 9 juil., 8 oct., suppl.: 46, 150. Q2.N2, v. 37.2–38.2

News notes and ephemerides in his quarterly "Bulletin astronomique" column.

2906
Touchet, Émile. La comète de Halley: passage probable de la terre à travers la queue de la comète. La Nature, 38. année, 15. jan. 1910: 100–103. illus. Q2.N2, v. 38.1

A diagram shows the path of the comet, Jan. 5–May 19, and that of the sun, Mar. 15–May 30.

2907
Touchet, Émile. Rapports divers sur la rencontre de la comète de Halley avec la terre. *In* Société astronomique de France. Bulletin, 24. année, août 1910: 359–367. QB1.S6, v. 24

Quotes or paraphrases reports presented by Pierre Puiseux, Pierre Salet, Ch.-Éd. Guillaume, and Jean Mascart.

2908

Touchet, Émile. La rencontre céleste du 19 mai prochain. Le passage de la comète devant le soleil sera visible à Paris. La Nature, 38. année, 14 mai 1910, suppl.: 189–190. illus. Q2.N2, v. 38.1

2909

Touchet, Émile. Le retour de la comète de Halley. La Nature, 37. année, 2 oct. 1909: 287–288. Q2.N2, v. 37.2

2910

Tournier, Gaston. La comète de Halley. Écho minier et industriel, 2. année, mars 1910: 212–215.

2911

Toynbee, Paget J. Dante and Halley's Comet. Times (London), Dec. 31, 1913: 66. N&CPR

Cites a passage in Dante's *Convivio*, as well as records of contemporary chroniclers, that seem to relate to the 1301 appearance of the comet.

2912

Track of Halley's Comet during 1910. (As far as ascertainable.) *In* The Science year book. 6th; 1910. Edited by Major B. F. S. Baden-Powell. [London] King, Sell & Olding [1909] p. [42a] illus. Q9.S3, 1910

The comet's route from Oct. 2, 1909, to May 21, 1910, is traced on a constellation chart. A list of previous returns of the comet is also given.

2913

The Transit and tail of Halley's Comet. Nature, v. 83, June 23, 1910: 501–502. Q1.N2, v. 83

Summarizes reports published in *Astronomische Nachrichten*, Nr. 4418, a special circular from the Zô-Sè Observatory in China, and the *Comptes rendus* for June 13, presents a brief account from H. H. Gruning at Ealing, and notes a newspaper report of an observation made at Salterforth, Lancs., of a tail about 40° in length rising about 3:30 a.m. on May 26.

2914

Transit of Halley's Comet. *In* Astronomical Society of the Pacific. Publications, v. 22, Apr. 1910: 101–102. QB1.A4, v. 22

Reports various plans for observations and gives "calculated times of ingress and egress for the Pacific Slope."

2915

The Transit of Halley's Comet. Scientific American, v. 102, May 28, 1910: 438. T1.S5, v. 102

Reprinted in *Comets; Readings From Scientific American*, p. 21–22 (San Francisco, W. H. Freeman [1981] QB721.C65).

2916

The Transit of Halley's Comet May 18. Popular astronomy, v. 18, Apr. 1910: 240–241. illus. QB1.P8, v. 18

A diagram shows the apparent path of the comet across the sun's disk.

An adaptation of this article and its accompanying diagram appears under the title "Passage de la tête de la comète devant le soleil" in the *Bulletin* of the Société astronomique de France, 24. année, mai 1910, p. 233–234 (QB1.S6, v. 24).

2917

Trogus, Wolfgang, Rolf Ockert, *and* Rolf D. Auer. A European probe to comet Halley. *In* Progress in planetary exploration. Proceedings of symposium 1 and the topical meeting of the COSPAR Interdisciplinary Scientific Commission B of the COSPAR twenty-third plenary meeting held in Budapest, Hungary, 2–14 June 1980. Edited by R. W. Shorthill, M. YA. Marov, and J. A. M. McDonnell. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1981] (Advances in space research, v. 1, no. 8) p. 131–136. illus. DLC

References (2): p. 134.

2918

Troy, Anna C. Halley's Comet (march-two step). New York, J. H. Remick [1910] 5 p. M31.T

For piano.

Cover design includes a portrait, presumably of the composer.

The second page reproduces part of a new setting for "My Rosary."

2919

T͡Seraskiĭ, Vitol'd K. Observation du soleil, à l'observatoire de Moscou, pendant le passage de la comète Halley sur son disque. Astronomische Nachrichten, Bd. 187, Nr. 4466, 19. Jan. 1911: columns 31–32. QB1.A77, v. 187

2920

[Turner, Herbert H.] [Comet Halley] Observatory, v. 33, Mar. 1910: 150. QB1.O2, v. 33

Poem. Three of the four stanzas appear here; the last, and the identity of the writer, can be found on p. 147–148 of Margaret D. Wilson's biography of her father, *Ninth Astronomer Royal; the Life of Frank Watson Dyson* (Cambridge [Eng.] Published for the Dyson Family by W. Heffer [1951] QB36.D9W5).

2921

Turner, Herbert H. Halley and his comet; the Aldred Lecture. *In* Royal Society of Arts, *London*. Journal, v. 58, May 6, 1910: 603–608. T1.S64, v. 58

Discussion appears on p. 608–609.

——— ——— English mechanic and world of science, v. 91, May 13, 1910: 327–328. T1.E5, v. 91

Reprints the lecture only, not the discussion. An abridgment of the lecture can be found in *Nature*, v. 83, May 26, 1910, p. 387–388 (Q1.N2, v. 83).

2922

Turner, Herbert H. Halley's Comet. *In* Royal Institution of Great Britain, *London*. Proceedings, v. 19, Nov. 1912: 753–764. Q41.R8, v. 19

A lecture presented at the weekly evening meeting of Feb. 18, 1910.

Discusses Halley's researches and prediction, Cowell and Crommelin's orbit calculations, searches for records of early sightings, and the future of the comet. Turner makes the interesting point that although the comet does not go very far beyond the orbit of Neptune, "by the peculiarities of elliptic motion under gravity it spends half its time doing the small arc which lies beyond Neptune's orbit."

Also published in *Chemical News*, v. 101, Apr. 22–29, 1910, p. 187–189, 197–198 (QD1.C5, v. 101).

A summary appears in the *English Mechanic and World of Science*, v. 91, Feb. 25, 1910, p. 78 (T1.E5, v. 91).

2923

Turner, Herbert H. Halley's Comet; an evening discourse to the British Association, at their meeting at Dublin, on Friday, September 4, 1908. Oxford, At the Clarendon Press, 1908. [illegible] p. illus., plates, ports. QB723.H2T8

Also published in the Association's *Report of the Seventy-Eighth Meeting, Dublin, September 1908* (London, J. Murray, 1909), p. 945–948 (Q41.B8, 1908).

A second edition (Oxford, At the Clarendon Press, 1910. 34 p. illus., plates, ports.), with a "Note Added February 7, 1910," is included in *Oxford Lectures on Natural Science, 1903–1923* (Q171.O9).

2924

Tweedale, Charles L. [Halley's Comet] English mechanic and world of science, v. 90, Jan. 14, Jan. 28, 1910: 560, 610; v. 91, Feb. 18, Mar. 4, May 27: 62, 103–104, 378. T1.E5, v. 90–91

Letters to the editor reporting observations made at Weston, near Otley, Yorks., on Jan. 4, 13, and 30, Feb. 11 and 25, and May 23. In the second letter, he also gives the comet's elements, which are criticized by Charles T. Whitmell in the issue of Feb. 4 (p. 11). The Rev. Mr. Tweedale responds in his third and fourth letters, and Whitmell's rejoinders appear in the issues of Feb. 25 (p. 82) and Mar. 11 (p. 127).

2925

Two-comet spaceflight sought. Science news, v. 116, Nov. 17, 1979: 343. illus. Q1.S76, v. 116

On the Halley/Tempel 2 mission.

2926

Two-spacecraft Venus, Halley mission planned. Aviation week & space technology, v. 116, Mar. 8, 1982: 278–279. illus. TL501.A8, v. 116

On Soviet plans.

2927

Ubach, José. El cometa de Halley. Su paso cerca de la tierra. Barcelona, G. Gili, 1910. 46 p. plates.

Included in the "List of Additions to the Library of the Society, June 1909 to June 1910," in the Royal Astronomical Society's *Monthly Notices*, v. 70, supplementary no., p. [177] (QB1.R7, v. 70).

Reviewed in *Cosmos*, t. 62, 21 mai 1910, p. 587, and *Razón y fe*, t. 27, mayo 1910, p. 125.

2928

Ueber Bau und Beschaffenheit der Kometen, wie über ihr mögliches Zusammenstossen mit der Erde. Bibliothek der neuesten Weltkunde, 2. Th. 1836: 40–63. AP30.B58, 1836

Mostly about Halley's Comet.

2929

Ueber Kometen und insbesondere über den Kometen des Jahres 1834. Das National-Magazin, 1. Jahrg., Jan. 1–8, 1834: 1–2, 11–12. illus. AP30.N23, v. 1

"Der Komet des Jahres 1834" = Halley's Comet.

2930

U.S. *Naval Observatory*. Observations of comets [1908–1926] *In its* Publications. 2d ser., v. 12. Washington, U.S. Govt. Print. Off., 1929. p. 183–213. QB4.W32, v. 12

"Halley (1909 c)": p. 184–187. Data in tabular form are supplied for 29 observations made during Oct. 9, 1909–June 7, 1910.

2931

United States may miss Halley's Comet. Astronomy, v. 9, Jan. 1981: 58–59. QB1.A7998, v. 9

2932

Der Untergang der Welt am 18. V. 1910 durch den Halley'schen Kometen. Leipzig-Lindenau [S. Schnurpfeil] 1910. 14 p.

2933

Useless effusion. Town topics, v. 63, May 5, 1910: 17. AP2.T7, v. 63

Poem signed "The Wearied One," complains of all the fuss being made over the comet.

2934

Uspenskaia͡, N. V. Chto nam sulit kometa Gallei͡a 1986 goda? Priroda, avg. 1982: 125–128. illus. Q4.P78, 1982

Bibliographic footnotes.

2935

Valentiner, Wilhelm. Halley's Komet. Lichtausströmungen. *In his* Die Kometen und Meteore in allgemein fasslicher Form dargestellt. Leipzig, G. Freytag, 1884. (Das Wissen der Gegenwart; deutsche Universal-Bibliothek für Gebildete, 27. Bd.) p. 30–49. illus. CU; CtY; DN-Ob; MdBP; NN; OU; PPG

2936

Valentry, Duane. The worst of Halley's Comet; a cosmic chronology of the 'troubles' it has caused. Modern maturity, v. 25, Apr./May 1982: 69–71. illus. HQ1060.M6, v. 25

A popular account marred by misstatements.

2937

Valier, Max. Der Stern der Heiligen drei Könige. Das Weltall, 25. Jahrg., Dez. 1925: 37–41. QB1.W4, v. 25

Tries to show that the 12 B.C. appearance of Halley's Comet could have been the star of Bethlehem.

2938

Valz, Benjamin. Perturbations de la comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus hebdomadaires des séances, t. 1, 21 déc. 1835: 500. Q46.A14, v. 1

In a letter to Arago, he comments briefly on a statement made by de Pontécoulant in the letter published in the issue of 23 nov., p. 361–363.

2939

Van Biesbroeck, George. Observations de comètes et de petites planètes. *In* Brussels. Observatoire royale de Belgique. Annales. Nouv. sér. Annales astronomiques. t. 13. Bruxelles, Hayez, 1914. p. 525–618. plates. QB4.B99, n.s., v. 13

"Comète 1909 c (Halley)": p. 547–553. Records and describes observations made Oct. 21, 1909–June 18, 1910. Plate 3 reproduces five sketches made Nov. 18, 1909, and Jan. 10, Mar. 2, Apr. 27, and May 23, 1910.

2940

Vanýsek, Vladimír. Halleyova kometa 1986—cíl kosmických sond. Vesmír, roč. 60, [čís.] 12, 1981: 36[illegible]–367. Q4.V44, v. 60

The front cover and the inside front cover reproduce photographs of the comet taken May 8 at Mount Wilson and May 14 at Lick Observatory.

2941

Vanýsek, Vladimír. The possibility of a forward scattering effect in the continuous spectra of comets. Icarus, v. 8, May 1968: 510–512. QB1.I3, v. 8

References (5): p. 512.

Brief comment on an article about irregularities in the motion of Halley's Comet (1910 II) in which Sekanina and Vanýsek (*Icarus*, v. 7, Sept. 1967) suggested that the anomalous positional residuals can be explained by a meteoric cloud deviating from the center of gravity of the comet.

2942

Vasnet͡sov, M. V. Nabli͡udenii͡a komety Galle͡ia v Krymu v apri͡eli͡e 1910 goda. *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg*. Izvi͡estii͡a, vyp. 16, okt. 1910: 169–173. illus. QB1.R9, v. 16

2943

Veeder, T. E. De Witt. Observations of comets, made with the 26-inch and the 12-inch equatorials at the U.S. Naval Observatory. Astronomical journal, v. 26, Apr. 25, 1910, Jan. 30, 1911: 100, 182. QB1.A3, v. 26

Includes observations of Halley's Comet made Dec. 10–Feb. 10 and Apr. 22–May 4 by J. B. Eppes and May 6–June 7 by Asaph Hall, Jr.

2944
Voeder, T. E. De Witt. Observations of Halley's Comet, made with the 26-inch equatorial at the U.S. Naval Observatory. Astronomical journal, v. 26, Dec. 22, 1909, May 20, 1910: 45, 110. QB1.A3, v. 26

Observations were made on Oct. 9 by Matt Frederickson and on Oct. 20, Nov. 19, and Mar. 3–Apr. 19 by J. B. Eppes.

2945
Vela, A. Observaciones de cometas. *In* Madrid. Observatorio. Anuario del Observatorio de Madrid para 1912. Madrid, Bailly-Bailliere, 1911. p. [209]–256. illus. QB9.M2, 1912

Detailed instructions on how to make and reduce observations. An observation of Halley's Comet made May 10, 1910, is worked out as an example. Appended tables give data on the author's observations of this comet, Feb. 12–June 23, 1910, as published in *Astronomische Nachrichten*, Bd. 187, Nr. 4466, 19. Jan. 1911, columns 21–26 (QB1.A77, v. 187).

2946
Velupillai, David. ESA grasps comet lead. Flight international, v. 118, July 19, 1980: 161. TL501.F5, v. 118

2947
Vera, Vicente. El cometa de Halley. La Ilustración española y americana, t. 89, 8–15 abril de 1910: 199, 219, 222–223. port. AP60.I3, v. 89

2948
La Vérité sur les prétendus anathèmes lancés contre la comète de 1456 par le pape Calixte III. Cosmos, t. 13, 26 nov. 1858: 647–648. Q2.C78, v. 13

On Faye's unsuccessful attempts to verify in papal documents the legend concerning the excommunication of the 1456 comet.

See also Faye's further remarks on this subject at the end of his article, "Sur la figure des comètes," in *La Revue scientifique*, t. 29, 11 mars 1882, p. 294–295 (Q2.R53, v. 29).

2949
Véron, Philippe. La comète de Halley et Mira Ceti dans le Talmud? L'Astronomie, v. 96, juil./août 1982: 351–355. illus. DN-Ob

References (17): p. 354–355.

Errata appear in the nov. 1982 issue, p. 525.

2950
Véron, Philippe, *and* Jean-Claude Ribes. La comète Halley. *In their* Les comètes de l'antiquité à l'ère spatiale. [Paris] Hachette [1979] p. 70–88. illus., plates. QB721.V47

A diagram of the comet's orbit appears on p. 25; the comet figures in plates 2 and 7 (between p. 96 and [97]).

See also the account of manifestations of comet panic during the 1910 return (p. 127–129).

2951
Véron, Philippe. Is Comet Halley really dangerous? *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet,

Paris, 1982. Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 5–6. illus.
Includes bibliographic references.

2952
Vervolg van het verhaal der comecten, ofte wederlegging van het Nauwkeurig voorberigt van den schrikkelyke comeet, dewelke zig waarschynelyk binnen korte zal vertonen. Amsterdam, 1756.
Held by the Museum Meermanno-Westreeianum, The Hague.

2953
Very, Frank W. What is a comet's tail? Some new results from the recent appearance of Halley's Comet. Scientific American, v. 114, Feb. 5, 1916: 156, 160, 162. illus. T1.S5, v. 114

2954
Un Viaje al cometa Halley ... navegando a vela. Revista astronómica, t. 49, enero/abr. de 1977: 5. DN-Ob
Editorial on plans for a mission powered by solar sail.

2955
[Vico, Francesco de] Effemeridi della cometa d'Halley, calcolate secondo i diversi elementi dei signori Damoiseau e Pontécoulant, nell'occasione del ritorno ch'ella farà al suo perielio il novembre del corrente anno 1835. 14 p. fold. plate.
Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C3. 15.
The plate is a chart of the constellations with five tracks for the comet, based on elements calculated by Pontécoulant (2), Lubbock, and Damoiseau (2).

2956
Viewing comet from balloons. Fly, v. 2, June 1910: 6. TL501.F6, v. 2
Brief note. "All over the country balloon flights were made under the auspices of clubs and piloted by professional balloonists. Astronomers were invited to journey into the air to gain the clearest possible view of the phenomena attending the passage of the comet and the earth's trip through the comet's tail."

2957
Vil′ev, Mikhail A. Issledovanii͡a po teorii dvizhenii͡a komety Gallei͡a. *In* Russkoe obshchestvo li͡ubitelei͡ mirovedenii͡a. Izvi͡estii͡a, t. 6, avg. 1917: 215–219.

2958
Villard, Ray, *and* Terence Dickinson. To Halley and beyond. Star & sky, v. 2, Apr. 1980: 18–2[illegible] illus. DN-Ob

2959
Villareal, Federico. El cometa de Halley. Revista de ciencias, año 13, marzo–mayo de 1910: 49–58, 73–79, 97–98. illus. Q4.R35, v. 13
The author also discusses Halley's Comet in his "Los Cometas en tiempo de Huayna Capac," published in the feb. 1910 issue, p. 25–35.

2960
Virdung, Johann. Auslegung vnd bedeütniss des Cometen. [Speyer, 1531] 4 leaves.
Zinner 1472.

2961
Visconti, G., *and* Giorgio Fiocco. Increase of Na twilight emission after the earth's crossing of the orbital planes of Comets Halley and Encke. Journal of atmospheric and terrestrial physics, v. 35, Feb. 1973: 353–356.
QC801.J6, v. 35
References (11): p. 355–356.

2961a
Visnya, Aladár. A Halley-üstökös anyagáról. Uránia (Budapest), 11. évf., 1910. ápr.: 159–161.
On the comet's chemical composition.

2962
Vitali, Lodovico. Pronostico del magnifico maestro Ludouico Vidale, sopra la cometa. [Bologna, Stampato per li heredi di Hieronymo de beneditti, M. D. XXXI. [7] p.
Held by the British Library under shelfmark C. 27. h. 22. (17.).

2963
Vogel, Robert P. S. Beobachtungen des Halleyschen Kometen 1909 c am Kiewer Refraktor. Astronomische Nachrichten, Bd. 189, Nr. 4516, 31. Juli 1911: columns 59–60.
QB1.A77, v. 189
Observations made during the period Jan. 8–June 10, 1910.

2964
Voigt, Johann H. Der Lauff grosser Veränderungen nach Orient, aus verschiedener Cometen Bezeichungen [sic] Astrologice vorgestellet. [Stade] In Verlegung des Autoris, 1683. [24] p.
MH; NIC
"Cometen Anno 1682. im Augusto": p. [18]–[21]

2965
Voigt, Johann H. Nordisch Cometen-Geschrey, anno 1682 im Augusto. Von einem neuen Stern, welcher den 16. 17. 18. und folgende Tage Augusti zu nachts, einige Stunden Vor- und Nachmitternacht, in der Nord-Gegend erschienen ist. [Stade? 1682] 16 p.
Held by the Herzog August Bibliothek Wolfenbüttel under shelfmark 35.1 Astron. (1).

2966
Vom Halley'schen Kometen. Morgenblatt für gebildete Stände, 12.–19. Mai 1834: 449–450, 455, 457–458, 462–463, 465–466, 470–471, 473–475.
AP30.M6, 1834

2967
Vom Halleyschen Kometen. Natur, 2. Jahrg., 15. Aug. 1911, Beilage : 171*.
Reproduces the text of a letter from F. Zechmeister describing the comet as he saw it in Nossi-Bé, Madagascar.

2968
Vom Halleyschen Kometen. Sirius, 43. Bd., Sept. 1910: 193–199. DN-Ob

More reports of observations from many sources, mostly from publications, with commentary.

2969
Von dem Cometen oder geschwentzten newen Stern, welcher sich im September dieses 1607. Jahrs hat sehen lassen. Lübeck, Gedruckt bey J. Witten [1607] broadside (1 p.) illus.

Held by the Bibliothèque nationale (Paris) under shelfmark V. 12172 bis.

The illustration shows the comet's path in the heavens from Sept. 16 to Oct. 4. The constellations are represented by sketches of the creatures or objects they commemorate; Arcturus is the only star indicated.

2970
Voronſ͡sov-Velʹi͡aminov, Boris A. Structure and mass of cometary nuclei. Astrophysical journal, v. 104, Sept. 1946: 226–233. QB1.A9, v. 104

Bibliographic footnotes.

A study based on data obtained for comets Halley and Peltier (1936 a). The author concludes: "The solid nuclei are some 25–60 km in diameter and are composed of blocks some 160 m in diameter, which are nearly in contact. The mass is 3×10^{19} gm."

A more detailed presentation appears under the title "The Structure of Cometary Nuclei" in *Astronomicheskiĭ zhurnal*, t. 22, vyp. 6, 1945, p. 335–339, with 42 references (p. 344–345) and a Russian summary, "Stroenie kometnykh i͡ader," on p. 345–346 (QB1.A47, v. 22).

2971
Voûte, Joan. Beobachtungen des Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 184, Nr. 4402, 9. Apr. 1910: columns 171–172; Bd. 187, Nr. 4481, 6. März 1911: columns 347–350.
QB1.A77, v. 184, 187

Made at Leiden, Nov. 14–Dec. 15, 1909, and Jan. 10–June 9, 1910.

2972
Vsekhsvi͡atskiĭ, Sergeĭ K. Les enveloppes de la comète de Halley. Astronomische Nachrichten, Bd. 221, Nr. 5285, 3. Mai 1924: columns 77–80.
QB1.A77, v. 221

2973
Vsekhsvi͡atskiĭ, Sergeĭ K. The general catalogue of absolute magnitudes of comets. Astronomicheskiĭ zhurnal, t. 10, vyp. 3. 1933: 327–338.
QB1.A47, v. 10

References (6): p. 330.

Summary in Russian.

The catalog (p. 331–337) includes data on 10 appearances of Halley's Comet (1066–1910).

The extension and development of this study eventually culminated in the author's *Fizicheskie kharakteristiki komet* (see item 2974).

2973a

Vsekhsvi͡atskiĭ, Sergeĭ K. K istorii komety Gallei͡a. *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 286, 25 marta 1982: 3. DN-Ob

Presents a table showing the comet's absolute magnitude for appearances from 760 on (the figures are from his *Fizicheskie kharakteristiki komet*, item 2974) which indicates that the comet has been slowly weakening since 1066.

2974

Vsekhsvi͡atskiĭ, Sergeĭ K. Physical characteristics of comets. (Fizicheskie kharakteristiki komet.) [Translated and edited by IPST staff] Jerusalem, Israel Program for Scientific Translations; [available from the Office of Technical Services, U.S. Dept. of Commerce, Washington] 1964. 596 p. illus. QB721.V813

"Errata": [8] p. inserted.

Includes bibliographic references.

The first two parts of the work, "General Survey" and "Catalogue of Absolute Magnitudes," include information on Halley's Comet. The author argues from the data he has assembled "that comets disintegrate rapidly. We can only conclude that the age of short-period comets is measured in centuries, if not in decades."

The following appearances of Halley's Comet are described, with references to the principal reports of observations and orbit calculations, in pt. 3, "Observations and Physical Characteristics," the main part of the book:

467, 240, 163, 87, and 12 B.C.: p. 91;
A.D. 66; p. 91–92;
A.D. 141, 218, 295, 374, 451, and 530: p. 92;
A.D. 607, 684, and 760: p. 93;
A.D. 837: p. 94–95;
A.D. 912, 989, and 1066: p. 95;
A.D. 1145 and 1222: p. 97;
A.D. 1301: p. 98–99;
A.D. 1378: p. 99–100;
A.D. 1456: p. 101;
A.D. 1531: p. 103–104;
A.D. 1607: p. 112–113;
A.D. 1682: p. 120–121;
A.D. 1759: p. 128;
A.D. 1835: p. 161–164; and
A.D. 1910: p. 382–384.

Illustrations, chiefly from Lubieniecki, Hevelius, and Bessel, appear on p. 94, 96, 102, 104, 113, 115, 162, 163, and 383.

Originally published as *Fizicheskie kharakteristiki komet* (Moskva, Gos. izd-vo fiziko-matematicheskoĭ literatury, 1958. 575 p. illus. QB721.V8).

2975

Vulpius, Johann. Kurtze jedoch vollständige Beschreibung: des neulicherschienenen und über 4. Wochen gewährten Comet-Sterns, welcher in der andern Helffte des Augustmonats und ersten Helffte des Septembris lauffenden 1682. Jahres erschienen und von iederman mit bestürztem Gemüth angeschauet worden. Leipzig [1682] [8] p. illus.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 315.

A rough cut of a comet appears on the title page.

Includes a table of observations made Aug. 15, 17, 18, 19, 20, 21, 22, 23, 24, 26, 29, 30, and 31, and Sept. 3, 8, 9, 10, and 11/12.

2976

Vyssotsky, Alexander. Astronomical records in the Russian chronicles from 1000 to 1600 A.D. (as collected by D. O. Sviatsky). Lund, Published by the Observatory, 1949. 51, [1] p. map. (Meddelande fran Lunds Astronomiska observatorium, ser. 2, nr. 126) QB4.L962, s. 2, no. 126

Bibliographic footnotes.

The section on comets (p. 32–40) includes extracts from the chronicles that relate to the appearances of Halley's Comet in 1066, 1145, 1222, 1301, 1378, and 1531. A list of most of the first 24 volumes of the published collection of Russian chronicles appears on p. 49–51.

2977

Wächter, *Dr*. Ballonaufstiege und der Komet. Wiener Luftschiffer-Zeitung, 9. Jahrg., 1. Juni 1910: 190–191. TL503.W5, v. 9

2978

Wagner, Johann C. Atmosphaera sublunaris; oder, Eine gründliche, der Natur gemässe Erklärung, aller und ieder Erscheinungen, welche sich in den Lufft-Kreisse diser Welt begeben, ob solche natürlich- oder nicht, auch ob ihnen einige Bedeutungen zuzuschreiben. Darbey mit abgehandelt wird was dess in disem 1682. Jahrs, von neuen wiederum herfürleuchtenden entsetzlichen Comet-Sterns Natur, Lauff, und muthmassliche Bedeutung, und Würckung seyn werde. Zur Nachricht an das Liecht gegeben. Augspurg, Gedruckt bey J. Koppmayer, 1682. [28] p. fold. plate.

Held by the British Library under shelfmark 8563. aaa. 38. (8.).

"Dritte Abtheilung, Von dem gegenwärtigen Cometen, dessen Natur, Lauff, und vermuthlicher Bedeutung": p. [24]–[28]

The plate was also separately published, with two columns of text, as a broadside (see item 842).

2979

Wagner, M. H., *and* K. N. Kreyenhagen. Review of hydro-elastic-plastic code analyses as related to the hypervelocity particle impact hazard. *In* Comet Halley Micrometeoroid Hazard Workshop, *Noordwijk, The Netherlands, 1979*. Proceedings of an international workshop. Paris, European Space Agency, 1979. (ESA SP–153) p. 115–120. illus.

NASA accession no. N80–22217.

References (17): p. 119–120.

2980

Wahre Abbildung und Stand des Cometen, wie solcher über Franckfurt am Mayn den 15. 17. und 21. Augusti in der nacht von 9. biss Morgens halb vier Uhr, Nord-Osten zu, dieses 1682. Jahrs, und im Zeichen dess Krebs, unter der fordern Pfodten dess grossen Beers, nach astronomischen Observation, erschienen. Franckfurt am Mayn, Zufinden bey J.-G. Walthern, den Laden auff dem Pfarreysen, habend [1682] broadside (1 p.) illus.

The cut shows the position of the comet among the constellations.

2980a
Waiting for Halley. Scientific American, v. 249, Sept. 1983: 88, 92.
T1.S5, v. 249

2981
Waiting for Halley's Comet. New York times, v. 131, Dec. 22, 1981: C2.
N&CPR

Reports an unsuccessful search made at Kitt Peak on Dec. 2 and quotes Dr. Fred Whipple as stating that if the comet is not seen in the next few weeks it may not show up for a year.

2982
Waldrop, Morris Mitchell. Down to the wire with Halley. Science, v. 214, Oct. 2, 1981: 35. illus. Q1.S35, v. 214

"... until the Administration actually says 'No,' the space science community is going all out to win approval for the [Halley flyby] mission. The answer will have to come within the next few weeks." Various options are described, among them a sample return mission and rerouting the Galileo spacecraft to pass the comet on its way to Jupiter.

2983
Waldrop, Morris Mitchell. In quest of Comet Halley. Science, v. 216, May 7, 1982: 606. illus. Q1.S35, v. 216

On the search that has been conducted at Kitt Peak National Observatory, at intervals during the last few years, most recently by Michael J. S. Belton and Harvey Butcher.

2984
Walker, Sears C. Halley's Comet. Hazard's register of Pennsylvania, v. 16, Sept. 19, 1835: 177–178. F146.H42, v. 16

"From the National Gazette."

Describes observations made at Philadelphia Sept. 6 and 8.

Also reprinted in the *Army and Navy Chronicle*, v. 1, Sept. 24, 1835, p. 305–306 (U1.A6, v. 1).

2985
Wallis, Max K., *and* M. H. A. Hassan. Electrodynamics of submicron dust in the cometary coma. Astronomy and astrophysics, v. 121, May (I) 1983: 10–14. illus. QB1.A83, v. 121

References (29): p. 14.

"Electromagnetic forces derived from the solar wind fields act strongly on submicron dust grains in the cometary coma. The grain charge and thus the forces are sensitive to composition and cometary plasma conditions, as well as to grain size. For dielectric grains of 0.1 µm and conducting grains of 0.3 µm or less, the electromagnetic forces dominate over radiation pressure. The stronger accelerations may produce fan-like structures as sometimes observed. They would also cause grains to circumvent the shields designed to protect the Giotto and Vega spacecrafts speeding through comet Halley's dust coma."

2986

Wallis, Max K. Expectations of Giotto. *In* Workshop on Interstellar Comets, *Edinburgh, 1982*. Proceedings. Edited by S. V. M. Clube and B. McInnes. Edinburgh, Royal Observatory, 1982. (Occasional reports of the Royal Observatory, Edinburgh, no. 9) p. 56–60. illus. DN-Ob

References (15): p. 60.

"Plasma and atmospheric phenomena, and nucleus outgassing concepts are surveyed in relation to measurements planned for the *Giotto* mission to comet Halley. How far fluid models of the plasma and gas are appropriate, what mechanisms produce the impressive and variable structures, and what are the primary constituents less volatile than H_2O, are key questions to resolve."

2987

Wallis, Max K. Probing energetic particles in Comet Halley. Geophysical journal, v. 57, Apr. 1979: 303. QC801.G382, v. 57

Abstract of a paper presented at the third U.K. Geophysical Assembly, Apr. 2–5, 1979, at the University of Southampton.

"Of the various phenomena in the cometary coma involving energetic particles . . . only a limited examination would be possible during the fast and distant flyby of comet Halley . . . Apart from the in-situ measurement of ions and field structure associated with the bow shock . . . detection of energetic neutral particles offers the best science return."

2988

Walpole, Horace, *4th Earl of Orford*. To Mann, Friday 1 June 1759. *In his* Correspondence with Sir Horace Mann. v. 5. Edited by W. S. Lewis, Warren Hunting Smith, and George L. Lam. New Haven, Yale University Press, 1960. (The Yale edition of Horace Walpole's correspondence, v. 21) p. 293–295. DA483.W2A12, v. 21

Bibliographic footnotes.

Includes a paragraph about the comet, the predicted return of which he ascribes to Newton.

2989

Walters, Samuel. Rendezvous with Halley's Comet. Mechanical engineering, v. 99, Sept. 1977: 48. illus. TJ1.A72, v. 99

The illustration shows "artist's concept of Solar Electric Propulsion System (SEPS)."

2990

Walthert, Otto. NASA plant Kometensonde zu Halley und Tempel 2. Orion, 38. Jahrg., Juni 1980: 86, 91. illus.

References (2): p. 91.

2991

Walusinski, Gilbert. Comète de 1607 et de 1957. L'Astronomie, 71. année, sept. 1957: 336. QB1.S6, v. 71

Notes that a career in astronomy was opened to Bessel when he calculated the orbit of Halley's Comet from observations made by Kepler in 1607, and wonders whether Comet Arend-Roland might perform a similar service for someone in 1957.

2992

Wann erscheint der längst erwartete Komet? Beantwortet für den Bürger und Landmann. Halle, Kümmel, 1835. 16 p.

2993

Wanna buy a comet picture? New York times, v. 130, July 31, 1981: A22. N&CPR

Editorial questioning the value of a U.S. space mission to Halley's Comet.

2994

Wanted: $150 million to televise Halley's comet. High technology, v. 2, Mar./Apr. 1982: 80. illus. T1.H5, v. 2

More on the private Halley mission being promoted by Stan Kent of Delta Vee. The illustration, by David Frampton, is a clever caricature of the Bayeux Tapestry comet panels.

2995

Ward, Isaac W. [Halley's Comet] English mechanic and world of science, v. 90, Dec. 3, 1909: 423; v. 91, Mar. 4, 1910: 103. T1.E5, v. 90–91

Letters to the editor, the first including comments on the calculation of the comet's orbit, and the second, some remarks on its expected close approach to Venus.

2996

Ward, Joseph T. Halley's Comet. *In* Wanganui Astronomical Society, *Wanganui, N.Z.* Annual meeting. 1910. [Wanganui, Wanganui Chronicle Co.] p. 5–7. QB1.W2, 1910

2997

Wargentin, Pehr W. Historien om den comet, som åren 1531, 1607, 1682 och 1759, blifvit observerad. *In* Svenska vetenskapsakademien, *Stockholm.* Handlingar, v. 21, jan./mart. 1760: 1–14. Q64.S8, v. 21

2998

Wargentin, Pehr W. [Om Halley's komet] *In* Nordenmark, Nils V. E. Pehr Wilhelm Wargentin, Kungl. Vetenskapsakademiens sekreterare och astronom, 1749–1783. Uppsala, Almqvist & Wiksells boktr., 1939. p. 172. QB36.W34N6

From a letter dated June 22, 1759, to Mårten Strömer, in the collections of the K. Vetenskapsakademien. A shorter passage about the comet in a letter dated Aug. 23, 1759, from La Caille to Wargentin, is also quoted (p. 172–173).

2999

Warner, Irene E. T. Great events in the world during apparitions of Halley's Comet. Knowledge & scientific news, new ser. v. 6, Dec. 1909: 463–466. plate. Q1.K7, n.s., v. 6

3000

Warner, Irene E. T. Halley's Comet: the romance of its past. Popular astronomy, v. 19, Feb. 1911: 103–106. QB1.P8, v. 19

Includes two poems.

3001
Wartmann, Louis F. Carte céleste indiquant la trajectoire de la comète de Halley dans son retour en 1835 et ses positions géocentriques a des intervalles de dix, de quatre et de deux jours, pendant l'espace de seize mois, d'après les éphémérides de Messrs Bouvard et Olbers ... Suivie de la trajectoire de la comète d'Encke, dans son retour de cette année. [Genève? 1835] map.

Advertised, in the *Feuilleton du Journal de la librairie*, 29 août 1835, p. 3 (Z2165.B58, 1835), as "1 feuille lithographiée avec le plus grand soin."

3002
Wartmann, Louis F. Notice sur la carte céleste annexée au présent cahier, représentant la route géocentrique que décrivent les comètes d'Encke et de Halley dans leur retour en 1835. Bibliothèque universelle des sciences, belles-lettres et arts; sciences et arts, t. 59, mai 1835: 65–75. fold. map, fold. table. Q2.A77, v. 59

A talk given at the Aug. 6, 1835, meeting of the Société de physique et d'histoire naturelle de Genève. The sheet on which the map is printed measures 73 × 54 cm. It was also separately published (see item 3001). The table provides an ephemeris for the period Dec. 1, 1834–Mar. 31, 1836, and figures for the distance of the comet from the earth and from the sun for each of the 67 dates covered.

3003
Wartmann, Louis F. Sur la comète de Halley. *In* Archives des découvertes et des inventions nouvelles. 1836. Paris, Chez Treuttel et Würtz, M.D.CCC.XXXIX. p. 161–162. T2.A7, 1836

Copied from *L'Institut*, no 150, mars 1836.

3004
Wartmann. Louis F. Sur la dernière apparition de la comète de Halley. *In* Schweizerische naturforschende Gesellschaft. Actes de la Société helvétique des sciences naturelles, réunie a Neuchatel les 24, 25 et 26 juillet 1837. 22. session. Neuchatel, Impr. de Petitpierre, 1837. p. 67–70. Q67.S4, 1837

3005
Was haben wir von dem Halleyschen Kometen welcher im Spätsommer 1835 sichtbar wird zu erwarten? Oder, Bemerkungen über die physische Beschaffenheit der Kometen, mit Rücksicht auf die bevorstehende Erscheinung dieses Himmelskörpers. Danzig, Gerhard, 1835. 24 p.

3006
Washburn, Mark. In pursuit of Halley's Comet. Sky & telescope, v. 61, Feb. 1981: 111–113. illus. (part col.) QB1.S536, v. 61

Chiefly on the Halley Intercept Mission.

See also the diagram by Roger Sinnott of the comet's path among the stars, Oct. 1974 – Nov. 1985, on p. 123.

3007
Wasse, Michael P. Communications for the ESA Giotto (Comet Halley encounter) mission. *In* International Telemetering Conference (United

States). Proceedings. v. 17; 1981. [Woodland Hills, Calif., International Foundation for Telemetering] 1981. p. 1119–1132. illus.
TK399.I63a, v. 17

Reference (1): p. 1122.

"This space mission will investigate the structure of the comet by passing close to the nucleus. The spacecraft will first be injected into a geostationary transfer orbit where a perigee boost motor will deliver the kick necessary to encounter the comet post perihelion, as it passes through the ecliptic plane at a distance of 0.98 AU from the earth. The spinning spacecraft and the use of a shield for protection from the dust present in the comet atmosphere dictate the use of a despun high gain antenna with inclined beam. The telemetry downlink at 40 KBps is in X Band and will be received on the Parkes (Australia) radio telescope which will be specially adapted for the task. The trade offs leading to the selected communications configuration are described along with the various spacecraft hardware items such as antennas, transponder, decoder and twta."

3008

Watkins, John E. A comet camera as big as a house. Sunday star (Washington, D.C.), May 15, 1910, pt. 4: 2. illus., port. N&CPR

Photographing Halley's Comet at the U.S. Naval Observatory. The portrait is of Asaph Hall, Jr.

Also published in the *Los Angeles Times Weekly Illustrated Magazine*, v. 15, May 15, 1910, p. 616–617 (AP2.L815, v. 15). Some of the illustrations are different.

3009

Watkins, John E. Halley's comet revives end-of-the-world fear. Sunday star (Washington, D.C.), Mar. 13, 1910, pt. 4: 5. illus., ports. N&CPR

Also published, under title "Needless Fear of Comet," in the *Los Angeles Times Weekly Illustrated Magazine*, v. 15, Mar. 13, 1910, p. 326–327 (AP2.L815, v. 15).

3010

Watson, Albert D. Halley's Comet. *In* Royal Astronomical Society of Canada. Journal, v. 4, May/June 1910: 236. QB1.R485, v. 4

Poem.

3011

Watson, Albert D. Halley's Comet and its approaching return. *In* Royal Astronomical Society of Canada. Journal, v. 3, May/June 1909: 210–219.
QB1.R485, v. 3

A note from William F. Denning, entitled "Ancient Apparitions of Halley's Comet," which calls attention to some discrepancies in Dr. Watson's dates of previous returns of the comet, appears (with Watson's reply) in the July/Aug. 1909 issue, p. 327.

3012

Watson, Fletcher G. Get ready for Halley's Comet. Physics teacher, v. 15, May 1977: 260–261. QC30.P48, v. 15

Letter to the editor.

3013
Watson, Harry J. [Halley's Comet] English mechanic and world of science, v. 90, Jan. 21, 1910: 585; v. 91, Apr. 29, May 27, June 10: 285, 378, 423. illus.
T1.E5, v. 90–91

Letters to the editor. The first accompanies a diagram showing the orbits of Jupiter, Mars, the earth, Venus, and the comet; the second, a sketch showing the relative positions of Venus and the comet about 3:30 a.m. May 2; and the third, a diagram of the comet's path from perihelion to June 21. The fourth includes discussion of the visibility of the comet's tail, indicating that at Camberley, Surrey, on May 22, a slight tail "was suspected with the naked eye."

3014
Watson, James C. Halley's Comet. *In his* A popular treatise on comets. Philadelphia, J. Challen, 1861. p. 185–219. plate. QB721.W33

3015
Weaver, William Bruce. In search of Planet X. Astronomy, v. 1, Aug. 1973: 16–19. illus. (part col.) QB1.A7998, v. 1

Chiefly on Brady's hypothesis of a trans-Plutonian planet to explain disturbances in the orbit of Halley's Comet.

3016
Webb, A. E. Halley's Comet. Japan weekly mail, v. 53, May 7, 1910: 723.
AP8.J5, v. 53

Letter to the editor.

3017
Webb, Thomas W. Hints to observers of Halley's Comet. Analyst, v. 3, Oct. 1835: 134–138. AP4.A5, v. 3

Preceded by a letter to the editor. Noting his belief that "the scarcity of accurate information respecting Comets, is much greater than is usually supposed," Webb lists and describes, under 30 headings, "the particulars which it is desirable to ascertain."

3018
Weber, Moritz. Gemeinverständliche Anleitung zur Darstellung der Bewegungen des Halleyschen Kometen im Jahre 1910. Zugleich anwendbar auf alle Planeten. Wiesbaden, C. W. Kreidel, 1910. 12 p. illus.

3019
Weimar, J. Augustus. The comet mystery explained; knowledge of modern astronomers contrasted with Koreshan science. Flaming sword, v. 24, Aug. 1910: 249–250. BF1995.F3, v. 24

Answers a query about a newspaper report of a strange theory concerning Halley's Comet proposed by Col. Jean Baptiste Marchand. According to the newspaper article, reprinted in full though the source and date are not given, Marchand "declares that the body recently seen in our skies was not Halley's comet at all, but something entirely different, which he does not undertake to name or describe, and that the only genuine Halley's comet will not be visible until August. Halley's comet, Colonel Marchand proceeds to explain, is due to appear in the heavens every seventy-six years eleven hours, and the period of its revolution is invariable, for the reason that 'that period represents the integral period of movement of a body which has remained intact in its form and which gravitates no longer.'

"That explanation probably leaves nothing to be desired, but it may as well be added that Colonel Marchand believes that when Halley's comet reappears a few weeks hence, 'the Newtonian theory of gravitation will vanish forever, and in its place will be disclosed in majestic relief the true theory and principle of celestial mechanics.'" The response to the reader's query is largely a referral to the answer supplied in the June issue to another reader with a question about the comet (see next entry).

3020

Weimar, J. Augustus. Halley's Comet. Flaming sword, v. 24, June 1910: 187. BF1995.F3, v. 24

Answers the query, "What is Halley's comet, from a Koreshan viewpoint?" by quoting Koresh (Cyrus R. Teed) on comets.

3021

Weinek, Ladislaus. Einige Beobachtungen des Halleyschen Kometen im Mai 1910 an der Prager Sternwarte. Astronomische Nachrichten, Bd. 187, Nr. 4467, 13. Jan. 1911: columns 35–38. QB1 A77, v. 187

Observations made May 18–31.

3022

Weinek, Ladislaus. Einige Kometen-Notizen und -Beobachtungen aus dem Jahre 1910. Der Halley'sche Komet. *In* Prague. Universität. *Sternwarte.* Astronomische Beobachtungen an der K.K. Sternwarte zu Prag in den Jahren 1905–1909. Prag, K.u.K. Hofbuchdrucker A. Haase, 1912. p. 51–54. QB4.P9, 1905/9

Observations made Apr. 29–May 31, 1910.

3023

Weinek, Ladislaus. Ringmikrometer-Beobachtungen des Halleyschen Kometen an der Prager Sternwarte. Astronomische Nachrichten, Bd. 187, Nr. 4487, 28. März 1911: columns 443–446. QB1.A77, v. 187

Made May 22–June 1, 1910.

3024

Weiss, Edmund. Bemerkungen zu "Nochmals der Comet Halley und seine Meteoriten." Astronomische Nachrichten, 73. Bd., Nr. 1752, 15. Apr. 1869: columns 373–374. QB1.A77, v. 73

Falb's reply appears in 74. Bd., Nr. 1757, 22. Mai 1869, columns 71–72.

3025

Weiss, Edmund. Der Comet Halley und seine vermeintlichen Meteoriten. Astronomische Nachrichten, 73. Bd., Nr. 1731, 29. Dec. 1868: columns 41–42. QB1.A77, v. 73

Raises objections to and points out errors in Falb's article on Halley meteors published in Nr. 1727 of 4. Dec.

3026
Weiss, Edmund. Über Kometen, mit besonderer Beziehung auf den Halleyschen. *In* Verein zur Verbreitung naturwissenschaftlicher Kentnisse in Wien. Schriften. 50. Bd.; 1909/10. Wien, 1910. p. 59–92. illus. Q44.V6, v. 50

3027
[Weisse, Maximilian] Beobachtete Orte des Halley'schen Cometen an der Cracauer Sternwarte. Astronomische Nachrichten, 14. Bd., Nr. 335, 13. Juli 1837: columns 337–380. QB1.A77, v. 14

Details of observations made Sept. 2–Nov. 17, 1835, and Apr. 8–9, 1836, with notes on comparison stars.

3028
Weissman, Paul R., *and* Hugh H. Kieffer. Thermal modeling of cometary nuclei. Icarus, v. 47, Sept. 1981: 302–311. illus. QB1.I3, v. 47

A paper presented at IAU Colloquium 61, "Comets: Gases, Ices, Grains, and Plasma," held at Tucson, Arizona, Mar. 11–14, 1981.

References (17): p. 311.

"A new model of the sublimation of volatile ices from a cometary nucleus has been developed which includes the effects of diurnal heating and cooling, rotation period and pole orientation, and thermal properties of the ice and subsurface layers. The model also includes the contribution from coma opacity, scattering, and thermal emission, where the properties of the coma are derived from the integrated rate of volatile production by the nucleus. The model is applied to the specific case of the 1986 apparition of Halley's comet. It is found that the generation of a cometary dust coma actually increases the total energy reaching the Halley nucleus."

3029
Weissman, Paul R., *and* Hugh H. Kieffer. Thermal models of Comets Halley and Tempel 2. *In* American Astronomical Society. Bulletin, v. 12, no. 3, 1980: 731. QB1.A255, v. 12

Abstract of a paper presented at the 12th annual meeting of the Division for Planetary Sciences of the American Astronomical Society, Oct. 14–17, 1980, in Tucson, Arizona.

"A model of the sublimation of volatile ices on the surface of a cometary nucleus has been developed and used to study two short-period comets considered as possible targets for spacecraft flyby and rendezvous missions ... Surface temperature profiles are found for periodic comets Halley and Tempel 2 for different points along their orbits and with different initial parameter sets (albedo, surface thermal inertia, dust-to-gas ratio, etc)."

3030
Weitere Mitteilungen betreffend den Halleyschen Kometen. Astronomische Nachrichten, Bd. 185, Nr. 4417, 3. Juni 1910: columns 13–16. QB1.A77, v. 185

Reports from Oton Kučera in Agram (Zagreb), J. Franz in Breslau, Tadeusz Banachiewicz in Warsaw, and H. Osthoff in Cologne.

3031
Weitere Mitteilungen vom Halleyschen Kometen. Astronomische Nachrichten, Bd. 185, Nr. 4431, 4. Aug. 1910: columns 241–244. plate.
QB1.A77, v. 185

Antoniadi reports from Meudon on the appearance of the comet's head on May 24; J. Sykora, from Tashkend, on his observation of the comet during its transit across the sun's disk; and Rheden, from Sonnwendstein, on observations made May 31–June 4. There is also a report of Sotome's observations in Dairen, May 6–June 9, summarized from issues of the *Manchuria Daily News*. The plate, facing columns 231–232, includes sketches by Antoniadi, Sykora, and Rheden.

3032
Wekhof, A. Negative ions in comets. Moon and the planets, v. 24, Apr. 1981: 157–173. illus.
QB581.M65, v. 24

References (40): p. 172–173.

Investigates the primary sources of negative ions in comets and estimates the negative ion abundance for Halley's Comet as from 10^{-6} to 10^{-10} of electron densities. The author concludes that the detection of such negative ions as OH^-, CN^-, H^-, and O_2^- and their abundances "is within the range of present experimental techniques, and can be done simultaneously with measurements of electron abundances *in situ* during the mission to Halley's Comet . . ."

3033
Weldon, A. F. The comet polka. Chicago, 1909.

For solo B flat cornet.

3034
Weltuntergang am 19. Mai 1910. *In* Philippen, Jos, Edouard de Keyser, *and* Jacqueline Marinus. Histoire et charme de la carte postale illustree. Diest, Europa [1977] p. 101.
NC1872.P414

A comic postcard shows people trying various methods of escaping to the moon. A photographer offers pictures of the end of the world, to be taken at the moment of destruction and delivered as soon as possible thereafter; payment in advance is required.

3035
Wen, Hsien-tzu. The observations of Halley's Comet in Chinese history. Popular astronomy, v. 42, Apr. 1934: 191–201.
QB1.P8, v. 42

Cites sources recording 29 apparitions of the comet, beginning in 240 B.C.

Corrections of a few minor errors appear in the August issue, p. 418.

Comments by A. C. D. Crommelin were published in the *Journal* of the British Astronomical Association, v. 44, May 1934, p. 281 (QB1.B75, v. 44).

3036
Wendell, Oliver C. Ephemeris of Halleys' [sic] Comet. Popular astronomy, v. 16, Aug./Sept. 1908: 459–460.
QB1.P8, v. 16

For the period Aug. 2–Oct. 1. 1908.

Also published, under the heading "Halley's Comet," in the *Journal* of the Royal Astronomical Society of Canada, v. 2, July/Aug. 1908, p. 219 (QB1.R485, v. 2).

3037
Wendell, Oliver C. Halley's Comet. Popular astronomy, v. 16, Feb. 1908: 71. QB1.P8, v. 16

Provides ephemeris for the period Oct. 1, 1907–May 16, 1910.

3038
Wendell, Oliver C. Radiant point for meteors from Halley's Comet. Popular astronomy, v. 16, Oct. 1908: 518–519; v. 18, May 1910: 306. QB1.P8, v. 16, 18

3039
West, John L. Ion drive technology readiness for the 1985 Halley Comet rendezvous mission. AIAA/DGLR 13th International Electric Propulsion Conference, San Diego, California/April 25–27, 1978. 17 p. illus. ([AIAA paper] 78–641) Sci RR

References (19): p. 16–17.

Identifies the status of ion propulsion technology and the risk as of July 1977 of its use for the Halley's Comet rendezvous mission and estimates status and risk at the time of project start (Oct. 1978).

3040
West, John L. Ion propulsion module (IPM) technology readiness assessment—1985 Halley's Comet rendezvous mission. Presentation to F. Demeritte, NASA Office of Aeronautics and Space Technology, JPL. [Pasadena, Calif.?] Systems Design and Integration Section, Systems Division, 1977. 20 p. (NASA CR–155308) Sci RR

NASA accession no. N78–18120.

Objectives were to "provide information useful to NASA in assessing the risk of utilizing ion propulsion to perform a rendezvous mission with Halley's Comet in 1985 [and] provide for NASA consideration recommendations for reducing identified risks to the lowest possible level at project start in October 1978."

3041
West, Martin L. Alleged apparitions of Halley's Comet in the eighteenth century B.C. and earlier. *In* British Astronomical Association, *London.* Journal, v. 71, no. 7, 1961: 324–326. QB1.B75, v. 71

Comments on Kamieński's work; the latter's reply appears on p. 326.

3042
West, Paul. Fear not! World (New York), v. 50, Apr. 19, 1910: 8. N&CPR

Poem comparing Halley's Comet to Teddy Roosevelt.

Other poems by the same author, entitled "If the Comet Hits" and "All Over," appear in the issues of May 17, p. 10, and May 19, p. 8, respectively.

3042a
West, Richard M. Comets—distant and nearby. *In* European Southern Observatory. ESO messenger, no. 32, June 1983: 1–2. illus. DN-Ob

Contents: Comet P/Halley observed at ESO.—Is Halley active?—International Halley Watch.—Comet 1983 d passes the earth.

3043

West, Richard M. On the brightness law for comets with r>5 A.U. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 263–271. illus.

References (7): p. 270.

Discussion: p. 270–271.

Derives a value for the decrease in brightness of comets at large heliocentric distances from observations of comets 1974 XII, 1975 II, and 1977 IX. Applying this to P/Halley, the author finds that it will not reach mag 24 before 1984, which accounts for the fact that it had not yet been recovered despite "several determined attempts."

3044

West, Richard M., *and* Holger Pedersen. P/Halley: first signs of activity? Astronomy and astrophysics, v. 121, May (I) 1983: L11–L12. illus.
QB1.A83, v. 121

Letter to the editor.

References (8): p. L12.

"A comparison of two broad-band CCD exposures (3700–7800 A) of P/Halley (1982 i) on 10 December 1982 and 14 January 1983, with the Danish 1.5 m telescope on La Silla, indicates a brightness increase of $1\overset{m}{.}0 \pm 0\overset{m}{.}4$. The January image is broader than the seeing disc, although this may partly be a guiding effect. It is possible that the first signs of nuclear activity have been observed at ~10.5 AU. Accurate positions have been measured."

3045

Westberg, Friedrich. Der Stern der Weisen (Halleyscher Komet). *In his* Zur Neutestamentlichen Chronologie und Golgathas Ortslage. Leipzig, A. Deichert'sche Verlagsbuchhandlung Nachf., 1911. p. 41–49.
CCSC; CU; CtY; GEU-T; ICMcC; MBU-T; MiU; NN; NjPT; PU

3046

Westland, Charles J. Halley's Comet. English mechanic and world of science, v. 92, Sept. 16, 1910: 159. illus. T1.E5, v. 92

Letter to the editor accompanying photographs taken at Christchurch, N.Z., May 29 and June 11.

3047

Westland, Charles J. Observations [of Halley's Comet] *In* British Astronomical Association, *London.* Journal, v. 21, Oct.–Nov. 1910: 54, 124–125.
QB1.B75, v. 21

The first report describes observations made and photographs taken at Christchurch, N.Z., during June and July, and the second, during April and May.

3048

Westphalen, Herrmann. Ueber die Bahn des Halley'schen Cometen in den Jahren 1835 und 1836. Astronomische Nachrichten, 24. Bd., Nr. 573, 575,

27. Aug., 10. Sept. 1846: columns 333–348, 365–378; 25. Bd., Nr. 587–588, 28. Jan.–11. Feb. 1847: columns 165–192. QB1.A77, v. 24–25

Includes (columns 333–334) passages from letters from Bessel to Schumacher, Feb. 22, 1846, and Westphalen, Dec. 11, 1845; and (columns 187–190) an extract from a letter, Feb. 4, 1846, from Westphalen to Bessel.

3049

What are comets? Norwich magazine, v. 1, Jan.–May, July–Dec. 1835: 19–24, 49–53, 70–73, 105–111, 139–144, 206–211, 241–247, 267–274, 301–308, 338–342, 367–371. AP4.N9, 1835

Bibliographic footnotes.

The author argues that the theory of the periodic return of comets is not supported by fact, has not been proved mathematically, and is physically improbable, and believes "that the appearance of the comet of 1759 will be found to have been a fortuitous coincidence with Halley's prediction." Notes on p. 308 and p. 371–372 express strong doubts that the comet seen in the autumn of 1835 was really Halley's Comet.

3050

Wheeler, Robert L. Halley's threat. Forum, v. 105, Apr. 1946: 710–711. AP2.F8, v. 105

"From his column in the Providence Evening Bulletin."

Boyhood recollections of the spring of 1910 when a peaceful world was convulsed by Sunday supplement predictions of imminent destruction by the comet.

3051

Whipple, Fred L. A comet model. Astrophysical journal, v. 111, Mar. 1950: 375–394; v. 113, May 1951: 464–474; v. 121, May 1955: 750–770. QB1.A9, v. 111, 113, 121

Contents: 1. The acceleration of Comet Encke.—2. Physical relations for comets and meteors.—3. The zodiacal light.

The first two papers provide bibliographic footnotes; the third offers 40 references on p. 770.

These landmark papers proposed the now generally accepted icy-conglomerate model of the cometary nucleus. The first paper includes a few passing references to Halley's Comet, while the second contains some data on the mass of CO^+ and C_2 lost from P/Halley near perihelion and the characteristics of the meteor streams associated with it.

3052

Whipple, Fred L. Notes on the P/Halley nucleus. *In* Scientific and experimental aspects of the Giotto mission. Proceedings of an international meeting on 27–28 April 1981 at Noordwijkerhout, The Netherlands. Paris, European Space Agency, 1981. (ESA SP–169) p. 101–103.

NASA accession no. 82–14119.

References (10): p. 103.

"The evidence suggests that the nucleus of P/Halley is probably somewhat larger than that of C/Bennett 1970, with a radius R possibly in the range R = 2.5 to 4.0 km."

3053
Whitman, Frank P. Halley's Comet. *In* Western Reserve University, *Cleveland.* Bulletin, literary section, new ser., v. 13, May 1910: 3–6.
AS36.W4, n.s., v. 13

3053a
Whitmell, Charles T. Halley's Comet. *In* Leeds Astronomical Society. Journal and transactions. no. 18; 1910. Leeds, R. Jackson, 1911. p. 75–76.
DLC

Reprints a letter dated May 24 first published in the *Yorkshire Post,* describing an observation made May 23.

3054
Whitmell, Charles T. [Halley's Comet and Venus] English mechanic and world of science, v. 90, Jan. 28, 1910: 611; v. 91, May 6: 310.
T1.E5, v. 90–91

Letters to the editor. The first is in response to two queries raised by Col. Watson in the issue of Jan. 21 (p. 593–594) concerning the comet's distance from the earth and whether Venus would pass through the comet's tail about May 1, and the second concludes "that Venus can never pass through, or come really near, the tail of Halley's Comet."

3055
Whitmell, Charles T. The orbit of Halley's Comet. *In* British Astronomical Association, *London.* Journal, v. 20, Feb. 1910: 248–251.
QB1.B75, v. 20

A summary was read at a meeting of the Association on Feb. 23, 1910; Crommelin's comments appear on p. 237 of the same issue. A letter from Whitmell supplementing his paper appears in the March issue, p. 317–318.

3056
Whitney, Mary W. Tail of Halley's Comet. Astronomical journal, v. 26, Sept. 13, 1910: 140.
QB1.A3, v. 26

Observation made at the Vassar College Observatory on the morning of May 19 by C. E. Furness and H. M. Swartz.

3057
The Whole world's watching. Odyssey, v. 5, Mar. 1983: 14. illus.
QB46.O3a, v. 5

On the plans of the International Halley Watch.

3058
Wickham, R. [Halley's Comet] English mechanic and world of science, v. 91, Feb. 4, 18, 1910: 11, 61. illus.
T1.E5, v. 91

Letters to the editor that include descriptions of observations made at Kington, Herefordshire, on Dec. 31, 1909, and Jan. 3, 8, 11, and 12, 1910, and on Jan. 29–30 and Feb. 2 and 4. A sketch with the first letter shows the position of the comet at 6:30 and 10:20 p.m. on Jan. 12.

3059
Wider neu-scheinende entsetzliche Zorn- und Wunder-Ruthe Gottes oder: Cometen-Fackel, welche zu Nürnberg allhier ♂ den 15. Augusti Alter Zeit,

und so folgend beyde Tage hernach, in diesem mit GOtt lauffenden 1682. Jahr, mit Erstaunen vieler Leuthe sich erwiesen und sehen lassen. Nürnberg, Zu finden bey L. Loschge, an der Fleisch-Brucken [1682] broadside (1 p.) illus.

Held by the British Library.

The illustration shows the comet among the constellations, between Ursa Major and Cancer.

3060
Wigand, Albert. Erdmagnetische und luftelektrische Störungen in Halle beim Durchgang des Halley'schen Kometen am 19. Mai 1910. *In* Deutsche physikalische Gesellschaft. Verhandlungen, 12. Jahrg., 15. Juli 1910: 511–530. fold. plate. QC1.D41, v. 12

Observations were made with A. Lonius and B. Hesius.

A summary appears in *Naturwissenschaftliche Rundschau*, 25. Jahrg., 15. Sept. 1910, p. 479–480 (Q3.N8, v. 25).

3061
Wigand, Albert. Die Ionisierung der Erdatmosphäre durch den Halleyschen Kometen 1910, ein Beitrag zur Kenntnis des Ursprungs der durchdringenden Strahlung. Physikalische Zeitschrift, 18. Jahrg., 1. Jan. 1917: 1–6. QC1.P75, v. 18

3062
Wilczewski, Joseph. The real and apparent positions of Halley's Comet during its period of greatest importance. Popular astronomy, v. 18, May 1910: 257–262. illus. QB1.P8, v. 18

3063
Wilford, John N. Halley's Comet appears, a billion miles away. New York times, v. 132, Oct. 21, 1982: 1. illus. N&CPR

3064
Wilford, John N. Halley's Comet: the long hello begins. New York times, v. 132, Oct. 26, 1982: C1, C3. illus. N&CPR

3065
Wilford, John N. A 1986 rendezvous awaiting Halley's Comet. New York times, v. 126, Mar. 2, 1977: B1. illus. N&CPR

Chiefly on NASA's plans to send a solar sail spacecraft on a rendezvous mission.

3066
Wilford, John N. Rousing U.S. science to meet Halley's red dawn. New York times, v. 130, July 19, 1981, section 4: 22-E. illus. N&CPR

On the failure to fund any of NASA's proposed spacecraft ventures to Halley's Comet, and on its most recent plan for a Halley Intercept Mission.

3067
Wilkening, Laurel L. Missions to comets: the perspective in 1980. *In* College Park Colloquium on Chemical Evolution, *5th, College Park, Md., 1980.* Comets and the origin of life. Proceedings of the fifth College Park

Colloquium on Chemical Evolution, University of Maryland, College Park, Maryland, U.S.A., October 29th to 31st, 1980. Edited by Cyril Ponnamperuma. Dordrecht, Boston, D. Reidel Pub. Co. [1981] p. 24[illegible]–254.
QB721.C64 1980

References (5): p. 254.

Chiefly about plans for missions to Halley's Comet.

For a report of this talk, see "Comet Missions Due, But U.S. Project Is in Doubt," by Walter Sullivan, in the *New York Times*, v. 130, Nov. 3, 1980, p. A13 (N&CPR).

3068

Wilkening, Laurel L. Science objectives of the Comet Halley flyby/Tempel 2 rendezvous mission. *In* American Astronomical Society. Bulletin, v. 11, no. 3, 1979: 567–568.
QB1.A255, v. 11

Abstract of a postertalk presented at the 11th meeting of the Society's Division for Planetary Sciences, Oct. 23–26, 1979, at Clayton, Missouri.

3069

Will, George F. Meet Halley's Comet. Newsweek, v. 98, Aug. 3, 1981: 80. col. port.
AP2.N6772, v. 98

"... the Halley's comet intercept program, which can still be saved, should be used by the Administration as an opportunity to practice 'creative exceptionalism.' The country wants conservatism, but needs conservatism subtle enough to make exceptions to the principle of parsimony."

3070

Will again view the comet they saw 75 years ago. New York times, v. 59, May 15, 1910, magazine section: 2. ports.
N&CPR

About Mrs. Mary S. Bush (age 92), of Lowville, N.Y., Dr. Lewis Swift (89), of Marathon, N.Y., Mrs. Sarah D. Huntley (86), of Phoenix, Ariz., and Joseph Evans (84), of Newark, N.J.

3071

Will France be first to Halley's comet? New scientist, v. 88, Nov. 6, 1980: 353.
Q1.N52, v. 88

By joining the Soviets, the French may reach the comet before ESA.

3072

Will Halley's Comet fizzle? Popular mechanics, v. 154, July 1980: 14.
T1.P77, v. 154

Brief note quotes Prof. Miriam Jaffe of Purdue University regarding the unfavorable configuration expected for the 1986 return.

3073

William the Conqueror. (An English dream.) Literary digest, v. 40, Jan. 22, 1910: 135. illus.
AP2.L58, v. 40

Cartoon from *Kladderdatsch* (Berlin) showing a large comet in the sky as the German Emperor leads an invasion force against England.

3074

Williams, John. Observations of comets, from B.C. 611 to A.D. 1640. Extracted from the Chinese annals. Translated, with introductory remarks, and an appendix, comprising the tables necessary for reducing Chinese time to European reckoning; and a Chinese celestial atlas. London, Printed for the author by Strangeways and Walden, 1871. xxxii, 124 p., 7 leaves. 16 plates. Micro 30688 QB

Appearances of comets that have been tentatively or certainly identified as Halley's Comet are discussed in the following entries:

5: 467 B.C.;
10: 240 B.C.;
36: 87 B.C.;
51: 12 B.C.;
61: A.D. 66;
70: A.D. 141;
86: A.D. 218;
116: A.D. 296;
133: A.D. 373;
149: A.D. 451;
171: A.D. 607;
187: A.D. 684;
194: A.D. 760;
205–211: A.D. 837;
233: A.D. 912;
241: A.D. 989;
249: A.D. 1066;
260–261: A.D. 1145;
265: A.D. 1222;
282: A.D. 1301;
346: A.D. 1378;
311: A.D. 1456;
325: A.D. 1531; and
340: A.D. 1607.

For corrections of Williams' dates, see "Ancient and Mediaeval Observations of Comets and Novae in Chinese Sources," by Ho Peng Yoke, p. 128–131 (item 1424).

3075
Willis, Edgar C. Halley's Comet, 1909; observations at Norwich, with 18-in. reflector. *In* British Astronomical Association, *London*. Journal, v. 20, Nov. 1909: 95–97. QB1.B75, v. 20

Observations made during Oct. 25–Dec. 8. See also his remarks on p. 72 of the same issue and in the Mar. 1910 issue, p. 294, the latter reporting observations made Mar. 6 and 7.

3076
Wilson, Herbert C. The next apparition of Halley's Comet. Popular astronomy, v. 16, May 1908: 265–270. QB1.P8, v. 16

The orbit diagram published as a frontispiece to this issue is missing from LC's copy.

Reprinted in *Scientific American Supplement*, v. 66, Sept. 5, 1908, p. 158–159 (T1.S52, v. 66).

A French translation, "Le prochain retour de la comète de Halley," appears in the *Bulletin* of the Société astronomique de France, 22. année, juil. 1908, p. 297–302 (QB1.S6, v. 22).

3077

Wilson, Herbert C. Observations of comets, made with the 16-inch refractor of Goodsell Observatory. Astronomical journal, v. 26, Feb. 21, 1910: 75. QB1.A3, v. 26

Includes observations of Halley's Comet made Nov. 18–Jan. 20.

3078

Wilson, Herbert C., *and* Curvin H. Gingrich. Observations of comets, made with the 16-inch refractor of Goodsell Observatory. Astronomical journal, v. 26, May 20, 1910: 108. QB1.A3, v. 26

Includes observations of Halley's Comet made Jan. 29–Feb. 18.

3079

Wilson, Herbert C., *and* Ralph E. Wilson. Observations of Halley's Comet, made with the 16-inch refractor of Goodsell Observatory of Carleton College. Astronomical journal, v. 26, Sept. 13, 1910: 141. QB1.A3, v. 26

Observations made Feb. 26–June 21.

3080

Wilson, Herbert C. Sketches of the jets in the head of Halley's Comet. Popular astronomy, v. 18, Oct. 1910: 477–479. illus. QB1.P8, v. 18

Observations made Apr. 19–June 2 with the 16-inch telescope of Goodsell Observatory. Position angles of the jets are given. See also Wilson's sketches of the comet's tail, May 16, 17, and 19, May 18, and May 23, 25, 27, and 28, in the Aug./Sept. issue, p. 428, 429, and 430.

3081

Wilson, Margaret D. [Halley's Comet] *In her* Ninth Astronomer Royal; the life of Frank Watson Dyson. Cambridge [Eng.] Published for the Dyson Family by W. Heffer [1951] p. 147–148. QB36.D9W5

Dyson was then Astronomer Royal for Scotland and director of the Royal Observatory at Edinburgh.

3082

Wilson, Ralph E. The story of Halley and his comet. Popular astronomy, v. 18, June/July 1910: 357–366. illus., plates, port. QB1.P8, v. 18

3083

Winter, Patty. Franco-Soviet team plans Venus/Halley Mission. Astronomy, v. 10, Mar. 1982: 67. QB1.A7998, v. 10

3084

Winthrop, John. Two lectures on comets, read in the Chapel of Harvard-College in Cambridge, New-England, in April 1759, on occasion of the comet which appear'd in that month. With an appendix concerning the revolutions of that comet, and of some others. Boston, Printed and sold by Green & Russell, 1759. 44, xviii p. QB731.W8 1759 Rare Bk. Coll.

Evans 8522.

The lectures were read on the 11th and the 18th. See also his letter published in the *Pennsylvania Gazette*, Apr. 19, 1759, p. 2 (N&CPR).

3085
Wirtz, Carl W. Beobachtungen von Kometen am 49 cm-Refraktor der Strassburger Sternwarte. Astronomische Nachrichten, Bd. 186, Nr. 4446, 15. Okt. 1910: columns 87–96. QB1.A77, v. 186

Includes observations of Halley's Comet made Nov. 20, 1909–June 21, 1910.

3086
Wisser, Edward H. An amateur's observations of Halley's Comet. Popular astronomy, v. 19, Mar. 1911: 187–189. QB1.P8, v. 19

Observations made with a small telescope during the period Jan. 30–May 31, 1910.

3087
Wodetzky, József. A Halley-féle üstökös csóvájának elgörbülése. Természettudományi közlöny, 42. köt., 1910. jun. 1.: 480. Q44.B93, v. 42

Responds to a query from Fr. J. (see p. 478). See also the preceding brief note by the same author entitled "Az üstökösök cziántartalma és kimutatásának megbizhatósága," answering a query from D. A. (also appearing on p. 478).

3088
Wodetzky, József. A Halley-üstökös a föld közelében. Természettudományi közlöny, 42. köt., 1910. feb. 15.: 179–183. illus. Q44.B93, v. 42

Includes an ephemeris for the period Feb. 14–May 30.

3089
Wodetzky, József. A Halley-üstökös spektrálanaliziséről. Magyar chemikusok lapja, 1. évf., 1910 márc. hó 1–ápr. hó 1: 37–38, 45–46, 55–56.

3090
Wodetzky, József. A Halley-üstökös útja a csillagok között. Természettudományi közlöny, 42. köt., 1910. márc. 1.: 263–265. illus. Q44.B93, v. 42

3091
Wodetzky, József. A meteorrajok összefüggése a Halley-üstökössel. Természettudomanyi közlöny, 46. köt., 1914. márcz. 15.: 281–282. Q44.B93, v. 46

3092
Woeckel, Lorenz. Ueber die Kometen, besonders den im Laufe dieses Jahres erscheinenden, grossen Halley'schen. Mit einer Sterncharte, worinnen die Bahn des genannten Kometen angegeben. Nürnberg, Riegel und Wiessner, 1835. 43 p. fold. plate.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 420 and CR. C2. 173.

3093
Wolf, Max. Mitteilungen über den Halleyschen Kometen 1909 c. Astronomische Nachrichten, Bd. 183, Nr. 4390/4392, 3. März 1910: columns 423–426. QB1.A77, v. 183

Notes the appearance of a short tail on photographs taken Jan. 29, and the comet's visibility to the naked eye on Feb. 9. For comment on the latter, see "Max Wolf's Early Naked Eye Sighting of Halley's Comet in February, 1910," by Joseph N. Marcus (item 1999).

3094

Wolf, Max. Photographische Aufnahmen in Königstuhl. Astronomische Nachrichten, Bd. 187, Nr. 4486, 24. März 1911: columns 431–432.
QB1.A77, v. 187

Among these is a photograph of Halley's Comet taken Mar. 19, 1911.

3095

Wolf, Max. Photographische Aufnahmen von kleinen Planeten und Kometen. Astronomische Nachrichten, Bd. 183, Nr. 4392, 3. März 1910: columns 427–428.
QB1.A77, v. 183

Includes data from a photograph of Halley's Comet taken Feb. 10 at Königstuhl.

3096

Wolf, Max. Photographische Aufnahmen von Kometen und Planeten. Astronomische Nachrichten, Bd. 182, Nr. 4364, 20. Okt. 1909: columns 333–334.
QB1.A77, v. 182

Includes data from a photograph of Halley's Comet taken Oct. 10 at Königstuhl, as well as a description and magnitude estimate of 14.5 from a visual observation the same night.

3097

Wolf, Max. Photographische Aufnahmen von Planeten und des Halleyschen Kometen. Astronomische Nachrichten, Bd. 182, 24. Sept. 1909: columns 225–226.
QB1.A77, v. 182

Includes data from a photograph of the comet taken Sept. 15 at Königstuhl.

3098

Wolf, Max. Das Spektrum des Halleyschen Kometen vor seiner oberen Konjunktion. Heidelberg, C. Winter's Universitätsbuchhandlung, 1910. 7 p. (Sitzungsberichte der Heidelberger Akademie der Wissenschaften, Mathematisch-naturwissenschaftliche Klasse, Jahrg. 1910, 7. Abhandlung)
AS182.H4, 1910

3099

Wolf, Rudolf. Halleys Nachweis der Periodicität eines Kometen. Die Wiedererscheinung des Halley'schen Kometen. *In his* Handbuch der Astronomie, ihrer Geschichte und Litteratur. [2. Bd.] Zürich, F. Schulthess, 1892. p. 509–512.
CU; DN-Ob; ICJ; MA; MH; NjP; ODW; PSC; TxU; ViU

Includes bibliographic references.

3100

Wolf, Rudolf. Der Halley'sche Komet. *In his* Geschichte der Astronomie. München, Druck und Verlag von R. Oldenbourg, 1877. (Geschichte der Wissenschaften in Deutschland. Neuere Zeit. 16. Bd.) p. 701–705.
QB15.W85

Bibliographic footnotes.

3101

Wolf, Rudolf. Ueber Cometen und Cometen-Aberglauben. *In* Wissenschaftlicher Verein, *Zürich*. Monatsschrift, 2. Jahrg., 5./8.Heft 1857: 226–248.

Bibliographic footnotes.

"Ein in Zürich gehaltener öffentlicher Vortrag."

The comet of 1682 is discussed on p. 241–243. Paracelsus is quoted on the comet of 1531 (p. 233); Grasser, on the comets of 1531 and 1607 (p. 232); and Kepler, on the comet of 1607 (p. 230, 237).

3102

Wood, Harry E. Notes on Halley's Comet, 1910. South African journal of science, v. 7, Feb. 1911: 135–137. Q85.S5, v. 7

A footnote states that prints of 18 of the photographs taken at the Transvaal Observatory during the period Apr.–June 1910 were filed with the records of the South African Association for the Advancement of Science.

3103

Wood, Harry E. Observations of Halley's Comet, 1910. Photographic results. *In* Johannesburg. Transvaal Observatory. Circular, no. 4, July 11, 1910: 23–26. plates. DN-Ob

Describes 44 photographs taken Apr. 11–June 29, 1910; 40 are reproduced on the 9 accompanying plates. Inserted in the DN-Ob copy are prints of the photographs taken May 4 and 5.

3104

Wood, Harry E. Photographs of Halley's Comet, 1910. *In* Johannesburg. Transvaal Observatory. Circular, no. 5, Sept. 26, 1910: 55. plate. QB4.J7, no. 5

Describes photographs taken June 2, 3, 12, 25, and 29, reproduced on the accompanying plate.

3105

Wood, Howard John, *and* R. Albrecht. Outburst and nuclear breakup of Comet Halley—1910. *In* Modern observational techniques for comets; proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. (JPL publication 81–68) p. 216–219. illus. DN-Ob

References (4): p. 219.

"Computer processing of five plates of Comet Halley taken during the 1910 apparition shows that on May 24 strong asymmetric (with respect to the tail axis) fountain-like parabolic plumes had developed on the sunward side of the nucleus."

3106

Wood, Lincoln J. Navigation accuracy analysis for a Halley Intercept Mission. Journal of guidance, control, and dynamics, v. 5, May/June 1982: 300–306. illus. TL676.J65, v. 5

References (18): p. 306.

"Presented as Paper 81-0312 at the AIAA 19th Aerospace Sciences Meeting, St. Louis, Mo., Jan. 12-15, 1981."

3107
Wood, Lincoln J., *and* Steven L. Hast. Navigation accuracy analysis for the Halley flyby phase of a dual comet mission using ion drive. AIAA 18th Aerospace Sciences Meeting, January 14-16. 1980/Pasadena, California. New York, American Institute of Aeronautics and Astronautics [1980] 13 p. illus. (AIAA paper 80-115) Sci RR

References (18): p. 7-8.

Published as "Navigation Accuracy Analysis for an Ion Drive Flyby of Comet Halley" in the *Journal of Guidance and Control*, v. 4, July/Aug. 1981, p. 369-375 (TL676.J65, v. 4), with 16 references and attribution of authorship to Wood alone.

3108
Wood, Lincoln J., *and* Steven L. Hast. Navigation system design for a Halley Flyby/Tempel 2 Rendezvous mission using ion drive. *In* AAS/AIAA Astrodynamics Conference, *Provincetown, Mass., 1979*. Astrodynamics 1979; proceedings of the AAS/AIAA Astrodynamics Conference held June 25-27, 1979 in Provincetown, Massachusetts. Edited by Paul Penzo [and others. San Diego, Calif., Univelt, 1980] (Advances in the astronautical sciences, v. 40, pt. 1) p. 49-78. illus. TL787.A6A2, v. 40, pt. 1

"AAS 79-110."

References (22): p. 68-70.

Describes the preliminary navigation system design for the dual comet mission.

3109
Wood, Lincoln J., Suzanne L. Craig, Donald K. Yeomans, *and* Mark J. Bergam. Navigation system design for a Halley sample return mission. Journal of the astronautical sciences, v. 30, Oct./Dec. 1982: 329-346. illus. TL787.A6A3, v. 30

References (16): p. 346.

Presented at the AIAA 20th Aerospace Sciences Meeting, Jan. 11-14, 1982, Orlando, Florida.

Describes "the navigation system and the navigation strategy which would have been employed in such a mission, assuming a launch in August of 1985, an arrival at the comet in March of 1986, and a return to Earth in August of 1989."

3110
Wood, Lincoln J., Neil A. Mottinger, *and* James F. Jordan. Radio metric orbit determination for the Giotto mission to Comet Halley. AIAA 21st Aerospace Sciences Meeting, January 10-13, 1983/Reno, Nevada. New York, American Institute of Aeronautics and Astronautics [1983] 10 p. illus. (AIAA [paper] 83-0196) Sci RR

References (28): p. 6-7.

3111
Wood, Starr. The Halley-luia comet? Sketch, v. 70, June 1, 1910: 255. illus. AP4.S6, v. 70

Cartoon shows a couple seated on a bench beneath a small tree. Seeing signs of love and marriage among the stars, the woman says, "Oh, Horace! Aren't the comets lovely to-night?"

3112

Woolhouse, Wesley S. B. Ephemeris of Halley's Comet. *In* The Nautical almanac and astronomical ephemeris for the year 1835, with an appendix. Published by order of the Lords Commissioners of the Admiralty. London, J. Murray, 1833. p. 489–494. map. QB8.G6, 1835

"Reprinted from Supplement to the Nautical Almanac for 1833."

The ephemeris covers the period Aug. 3, 1835–Feb. 11, 1836. A table of coordinates for the sun and the comet for the same period is also given, as well as orbital elements for the comet as determined by Pontécoulant, Damoiseau, and Lubbock. The map shows three paths for the comet in the sky during the period Aug. 7, 1835–Feb. 7, 1836, according to each of these sets of elements.

3113

Woollgar, John W. Geometrical construction of the orbit of Halley's Comet, with illustrations of its phenomena founded thereon. Mechanics' magazine, v. 23, Sept. 26, 1835: 521–523; v. 24, Oct. 10: 29–30. illus. T1.I38, v. 23–24

3114

Woollgar, John W. Halley's Comet. Mechanics' magazine, v. 24, Oct. 3, 1835: 9. T1.I38, v. 24

Presents an ephemeris for the period Sept. 29–Oct. 11. See also the Oct. 17 issue, p. 42, for an extract covering Oct. 10–31, from an ephemeris issued by the Nautical Almanac Office.

3115

The Work of Dr. Cowell and Dr. Crommelin. English mechanic and world of science, v. 91, May 27, 1910: 373. T1.E5, v. 91

Reports on the ceremony conferring honorary D.Sc. degrees on the two men who investigated the motions of Halley's Comet, establishing its appearances "on a firm basis back to B.C. 240 . . . and forward from the last appearance in 1835 with such accuracy that it was found in September last close to the predicted place, when so faint that it could not have been recognised without their aid . . ."

3116

Workshop on Cometary Missions, *Bamberg, 1979.* Cometary missions; proceedings of a Workshop on Cometary Missions, Bamberg, February 20–22, 1979. [Edited by] W. I. Axford, H. Fechtig, J. Rahe. Bamberg, 1979. 223 p. illus. (Bamberg. Remeis-Sternwarte. Veröffentlichungen, Bd. 12, Nr. 132) DN-Ob

Includes bibliographic references.

Seven of the 30 constituent papers are separately listed in this bibliography; some of the others deal briefly with a possible mission to Halley's Comet.

3117
Wright, Jerome L., *and* Janice M. Warmke. Solar sail mission applications. AIAA/AAS Astrodynamics Conference, San Diego, California/August 18–20, 1976. New York, American Institute of Aeronautics and Astronautics, 1976. 6 p. illus. ([AIAA paper] 76–808) Sci RR

References (3): p. 6.

Considers the possibility of a solar sail vehicle for a Halley's Comet rendezvous mission.

3118
Wright, Mary M. The mysterious comet. Presbyterian banner, v. 96, May 26, 1910: 1680. BX8901.P48, v. 96

Chiefly about Halley's Comet.

3119
Wright, William H. Note on the spectrum of Halley's Comet. *In* Lick Observatory. Lick Observatory bulletin, v. 5, no. 167, 1909: 146. QB4.L7, v. 5

Reported as "The Spectrum of Halley's Comet" in *Nature*, v. 82, Nov. 25, 1909, p. 107 (Q1.N2, v. 82), and as "Das Spektrum des Halleyschen Kometen" in *Sirius*, 42. Bd., Dez. 1909, p. 282.

3120
Wurm, Karl, *and* B. Balazs. Dimensions of cometary heads and the lifetimes of the head molecules. Icarus, v. 2, Nov. 1963: 334–340. illus. QB1.I3, v. 2

References (8): p. 340.

Based on studies of photographs of Comet Brooks 1911 and Comet Halley 1910.

3121
Wurm, Karl. Die Natur der Kometen. *In* Astronomische Gesellschaft. Vierteljahrsschrift, 78. Jahrg., 1. Heft, 1943: 18–87. illus. QB1.A7, v. 78

Bibliographic footnotes.

—— —— Hamburg-Bergedorf, 1943. [57]–92 p. illus. (Mitteilungen der Hamburger Sternwarte in Bergedorf, Bd. 8, Nr. 51) DN-Ob

Bibliographic footnotes.

Contents: Einleitung.—I. Zur Deutung der Kometenformen.—II. Die Spektren der Kometen.

Data from 1910 observations of Halley's Comet are frequently cited, and section 2b of pt. I is an examination of Schwarzschild and Kron's study (see item 2691).

3122
Wurm, Karl. The substructure in the heads of comets with type I and type II tails. Astrophysics and space science, v. 27, Mar. 1974: 211–216. QB460.A876, v. 27

References (12): p. 216.

Bases his model of the structure and kinematics of dust streamers in the head or coma area on a study of 110 photographs of Halley's Comet taken at Helwan by Knox-Shaw during Jan. 15–June 15, 1910.

3123
Wylie, Charles C. Halley's Comet. *In his* Astronomy, maps, and weather. New York, Harper [1942] p. 360–363. illus. QB45.W85

References and illustrations relating to Halley's Comet appear also on p. 352–359. On p. 362 is a drawing by the author that shows the appearance of the comet's tail on May 18, 1910, at 3:15 a.m., when the head was still below the horizon.

3124
Wylie, Charles C. [Halley's Comet] *In his* Our starland; an easy guide to the study of the heavens. Chicago, Lyons & Carnahan [1938] p. 150–160. illus. QB46.W95

Includes drawings by the author that show the appearance of the comet on May 4, 14, and 18, 1910. The latter two are reproduced, with some cropping, in *Spaceflight*, v. 24, Dec. 1982, p. 443 (TL787.B725, v. 24).

3125
Wyllie, Charles W. How astronomers have seen Halley's Comet. Sphere, v. 41, June 4, 1910: 273. illus. AP4.S73, v. 41

"The astonishing aigrette, or fan, which Halley's Comet has revealed to telescopic observation"—drawn at Greenwich.

3126
Yabushita, S. The dependence on inclination of the planetary perturbations of the orbits of long-period comets. Astronomy and astrophysics, v. 20, Sept. (I) 1972: 205–214. illus. QB1.A83, v. 20

References (16): p. 214.

"Planetary perturbations of the orbital elements of long-period comets are calculated on the assumption that the orbits are parabolas. The perturbation of the binding energy of Halley's comet calculated by the parabolic approximation is compared with Cowell and Crommelin's calculation. It is shown that the agreement between the two calculations is such that the parabolic approximation can be used at least qualitatively for comets with periods as short as 77 years. The parabolic approximation also gives the secular change of the longitude of the ascending node."

3127
Yamamoto, A. S. Preliminary general catalogue of comets. Kyoto, 1936. 37 p. (Publications of the Kwasan Observatory, v. 1, no. 4) DN-Ob

At head of title: The Kyoto Imperial University.

Data for 30 returns of Halley's Comet are included, together with references to published sources.

3128
Yamasaki, M. Observation of Halley's Comet. English mechanic and world of science, v. 91, July 8, 1910: 520–521. illus. T1.E5, v. 91

Letter to the editor describing observations made at Los Angeles May 2–June 10. A sketch shows the comet's appearance on May 27 at 8:45 P.S.T.

3129
Yardley, Ralph O. Seeing Halley's Comet—the chance of a lifetime. Harper's weekly, v. 54, June 4, 1910: 20. illus. AP2.H32, v. 54

The drawing shows a young couple seated on a roof, leaning against a chimney. The comet, in which they are completely uninterested, can be seen in the night sky behind them.

3130
Ybarra, Thomas R. Halley in our alley. New York times, v. 59, Apr. 3, 1910, magazine section: 13. N&CPR

Poem. Another by this writer, entitled "Missed!" appears in the May 17 issue, p. 8. This was reprinted in the *Washington Post*, May 22, editorial section, p. 4.

3131
Yeh, Chia-hsin. 1910 nien Ha-lei hui hsing kuo ching shih ti tz'u ch'ang ti pien hua. A preliminary research on effect of Comet Halley 1910II to geomagnetic field. Ti ch'iu wu li hsüeh pao; Acta geophysica sinica, ti 26 chüan, 1983 nien 3 yüeh: 188–192. illus. 3738, v. 26 Orien China

References (9): p. 191–192.

3132
Yeomans, Donald K. Astrometric observations and the motion of Comet Halley. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982*. Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 277–285. illus.

References (9): p. 282.
Discussion: p. 284–285.

3133
Yeomans, Donald K. Comet Halley and applied historical astronomy. Archaeoastronomy, v. 4, Oct./Dec. 1981: 7. E59.A8A68, v. 4

Abstract of a paper presented at a meeting of the Historical Astronomy Division of the American Astronomical Society, Jan. 11–12, 1982, at Boulder, Colorado.

3134
Yeomans, Donald K. Comet Halley and nongravitational forces. *In* IAU Colloquium no. 39: Relationships Between Comets, Minor Planets, and Meteorites, *Lyons, 1976*. Comets, asteroids, meteorites: interrelations, evolution, and origins. Edited by A. H. Delsemme. [Toledo] University of Toledo, 1977. p. 61–63. QB721.I22 1976

References (2): p. 63.

"The motion of Comet Halley is investigated over the 1607–1911 interval. The required nongravitational force model was found to be most consistent with a rocket-type thrust from the vaporization of water-ice in the comet's nucleus. The nongravitational effects are time-independent over the investigated interval."

The discussion (p. 63–64) consists of comments by Delsemme, to which three references are appended.

SEEING HALLEY'S COMET THE CHANCE OF A LIFETIME

Some romantically inclined young persons discovered that the comet was a convenient excuse for retiring to a secluded spot. The artist, Ralph O. Yardley, studied at the Mark Hopkins Institute of Art in San Francisco and was for many years a staff cartoonist with the *Stockton Record* in Stockton, Calif. From *Harper's Weekly*, v. 54, June 4, 1910, p. 20.

3135
Yeomans, Donald K. Comet Halley and some dubious achievement awards. Griffith observer, v. 47, Apr. 1983: 2–10. illus. QB1.G7, v. 47

A photograph of the head of Halley's Comet, taken May 8, 1910, at Mount Wilson, is reproduced on p. 12–13.

3136
Yeomans, Donald K. Comet Halley: 837–1986 A.D. *In* American Astronomical Society. Bulletin, v. 9, no. 2, 1977: 299–300. QB1.A255, v. 9

Abstract of a paper presented at the 150th meeting of the Society, June 12–15, 1977, at Atlanta, Georgia.

3137
Yeomans, Donald K. Comet Halley ephemeris development. *In* American Astronomical Society. Bulletin, v. 14, no. 1, 1982: 580. QB1.A255, v. 14

Abstract of a paper presented at a meeting of the Society's Division on Dynamical Astronomy, Jan. 13–14, 1982, at Boulder, Colorado.

3138
Yeomans, Donald K., Robert A. Jacobson, B. G. Williams, *and* P. W. Chodas. Comet Halley ephemeris uncertainties in 1985–1986. Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1983. 15 p. illus. (Cometary Science Team preprint series, no. 33)

References (12): p. 14–15.

"To be published in the Proceedings of the International Conference on Cometary Exploration."

"For the planned flyby missions to comet Halley in March 1986, the comet's ephemeris uncertainties completely dominate the spacecraft-comet miss distance." A statistical covariance analysis was undertaken to assess the sensitivity of the comet's ephemeris to various effects. The authors conclude that "the most important and fundamental activity for reducing the comet Halley position uncertainties in the impact planes of the various spacecraft will be the accurate and timely astrometric positions supplied by a group of experienced observers working together within the Astrometry Network of the International Halley Watch."

3139
Yeomans, Donald K. The Comet Halley handbook, an observer's guide. Created for the International Halley Watch. [Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology] 1981. 44 p. illus. (JPL 400–91)

Includes bibliographic references.

Intended to assist anyone wishing to seek out the comet for a once-in-a-lifetime glimpse, "as well as for the small army of serious amateur and professional astronomers," the handbook discusses the comet's orbit, its expected physical behavior (brightness, tail length, and coma diameters) in 1985–86, and observing conditions during this period. A series of drawings shows how the comet may appear on various dates to observers at latitudes of 40°, 30°, and 20° north of the equator and at 20° and 30° south. Ephemerides are given at 10-day intervals for the period Dec. 25, 1980 – June 8, 1982; at 5-day intervals for June 18, 1982 – Sept. 30, 1984; and at daily intervals for Oct. 5, 1984 – Mar. 23, 1987. The cover reproduces a cut from a French *canard* of 1835.

—— ——— 2d ed. With a contribution from Zdenek Sekanina. [Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology] 1983. 44 p. illus. (JPL 400–91, rev 1 6/83) QB723.H2Y46 1983

"This second edition of the Comet Halley Handbook contains an updated orbit that includes recovery observations of the comet through January 14, 1983. Improved magnitude estimates for Comet Halley have been added, as well as a section on the comet's dust tail by Dr. Zdenek Sekanina." Includes ephemerides at 5-day intervals for the period July 24, 1982 – Aug. 7, 1984, and at daily intervals for Aug. 8, 1984 – May 4, 1987.

3140

Yeomans, Donald K. Comet Halley—the orbital motion. Astronomical journal, v. 82, June 1977: 435–440. QB1.A3, v. 82

References (40): p. 440.

Investigates the comet's orbit over the period A.D. 837–2061 and outlines viewing conditions for the 1986 return.

3141

Yeomans, Donald K., *and* Tao Kiang. Comet Halley's motion, 1404 B.C. – 1986 A.D. *In* American Astronomical Society. Bulletin, v. 13, no. 3, 1981: 704. QB1.A255, v. 13

Abstract of a paper presented at a meeting of the Society's Division for Planetary Sciences, Oct. 13–16, 1981, at Pittsburgh, Pennsylvania.

3142

Yeomans, Donald K. Cometary ephemerides for spacecraft flyby missions. *In* Recent researches into solid bodies and magnetic fields in the solar system. Proceedings. Oxford, New York, Published for the Committee on Space Research by Pergamon Press [1983] (Advances in space research, v. 2, no. 12) p. 145–149. QB723.H2R4 1983

References (15): p. 149.

"Final mid-course maneuvers for each spacecraft will depend upon an accurate cometary ephemeris in early March 1986." Describes the factors contributing to cometary ephemeris uncertainties, the problems involved in achieving a satisfactory mathematical model of the nongravitational forces affecting the comet's motion, and the development of an Astrometry Network by the International Halley Watch to obtain accurate astrometric observations as quickly as possible.

3143

[Yeomans, Donald K.] International Halley Watch. [Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1980] [12] p.

3144

Yeomans, Donald K., *and* Tao Kiang. The long-term motion of Comet Halley. *In* Royal Astronomical Society. Monthly notices, v. 197, Nov. 1981: 633–646. DN-Ob

References (41): p. 645–646.

Reviews the history of efforts to determine past appearances of the comet from historical records and provides computed perihelion passage dates and orbital elements back to 1404 B.C.

—— ——— Pasadena, Calif., National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, 1981. 27 p. (Cometary Science Team preprint series, no. 4)

References (44): p. 20–21.

3145

Yeomans, Donald K. The motion of Comet Halley back to 1404 B.C. *In* American Astronomical Society. Bulletin, v. 11, no. 4, pt. 2, 1979: 802. QB1.A255, v. 11

Abstract of a paper presented at a meeting of the Society's Dynamical Astronomy Division, Feb. 28–Mar. 2, 1979, at Stanford University.

3146

Yntema, L. De komeet van Halley. De Natuur, 29. jaarg., 15 sept. 1909: 269–270. Q4.N2, 1909

A note announcing Wolf's recovery of the comet appears in the issue of 15 oct., p. 318.

3147

Yntema, L. De komeet van Halley. De Natuur, 30. jaarg., 15 apr. 1910: 97–102. illus., maps. Q4.N2, 1910

3148

Yntema, L. Nadere bijzonderheden omtrent de komeet van Halley. De Natuur, 30. jaarg., 15 mei 1910: 129–135. illus., ports. Q4.N2, 1910

3149

Young, Albert. Photographing Halley's Comet with home-made apparatus. *In* Royal Astronomical Society of Canada. Journal, v. 6, Sept./Oct. 1912: 281–282. plate. QB1.R485, v. 6

3150

Young, D. T. Consequences of the coma environment of Comet Halley for a fast flyby spacecraft. *In* Comet Halley probe plasma environment. Proceedings of a series of workshops held in 1979–80. Paris, European Space Agency, 1981. (ESA SP–155) p. 91–96. illus.

NASA accession no. N81–34120.

References (8): p. 96.

"Results of the ESA Halley Probe Plasma Environment Workshop are summarized. A fast flyby (57 km/s) of the nucleus of comet Halley will produce limited spacecraft charging and a considerable amount of spurious plasma due to the impact of cometary dust and neutral gas. Possible effects of the resulting spacecraft environment on the scientific mission are discussed."

3151

Young, G. [Halley's Comet] English mechanic and world of science, v. 90, Jan. 21, 1910: 586. T1.E5, v. 90

Letter to the editor reporting an observation made Jan. 12 at Perth (Scotland).

3152
Zach, Franz X., *Freiherr* von. Auszüge aus zwei Schreiben des H. Oberhofmeister Freiherrn von Zach an den Director der Sternwarte Seeberg. Zeitschrift für Astronomie und verwandte Wissenschaften, 2. Bd., Jul./Aug. 1816: 100–123. DN-Ob

Chiefly about the comet observations of Alessandro Marchetti. The second letter (p. 114–123), detelined "Genua den 1. May 1816," is concerned with the comet of 1682. A table gives details of 12 observations made by Marchetti during the period Aug. 30–Sept. 19.

3153
Zach, Franz X., *Freiherr* von. Etwas aus den, vom Herrn von Zach im Jahr 1784 in England aufgefundenen Harriotischen Manuscripten, vornemlich Original-Beobachtungen der beyden Kometen von 1607 und 1618. *In* Sammlung astronomischer Abhandlungen, Beobachtungen und Nachrichten, hrsg. von J. E. Bode. 1. Supplement-Band zu dessen astronomischen Jahrbüchern. Berlin, Bey G. A. Lange, 1793. p. [1]–41.

3154
Zach, Franz X., *Freiherr* von. Observations originales et inédites de la comète de l'an 1759. Correspondance astronomique, géographique, hydrographique et statistique du Baron de Zach, v. 6, no 2, 1822: 197–203.
QB1.C9, v. 6

Unpublished records left by Tobias Mayer.

3155
Zadunaisky, Pedro. Motion of Halley's Comet during the return of 1910. Astronomical journal, v. 71, Feb. 1966: 20–27. illus.
QB1.A3, v. 71

References (8): p. 27.

"The computation is based on about 2800 observations made from August 1909 through May 1911 by 63 different observatories."

3156
Zadunaisky, Pedro. Preliminary report on a new computation of the orbit of Halley's Comet. Astronomical journal, v. 67, June 1962: 286.
QB1.A3, v. 67

Abstract of a paper presented at the 110th meeting of the American Astronomical Society, Apr. 1–4, 1962, at Cambridge, Massachusetts.

Abstracts of similar papers appear as follows: "La Órbita definitiva del cometa Halley," presented at a meeting of the Union Matematica Argentina, Sept. 21–23, 1961, at Buenos Aires, and published in the Union's *Revista*, v. 19, no. 5, 1962, p. 361–362 (QA1.A86, v. 19), and "Informe preliminar sobre un nuevo calculo de la órbita del cometa Halley," presented at the fifth scientific session of the Asociación Argentina de Astronomía, July 11–13, 1962, at the San Juan observatory, and published in the Asociación's *Boletín*, no. 5, 1962, p. 49.

3157
Zahn, Johann. Catalogus I[–II] *In his* Specula physico-mathematico-historica notabilium ac mirabilium sciendorum. t. 1. Norimbergae, Sumptibus J. C. Lochner, An. M. DC. XCVI. p. 162–214.
Q155.Z3 Rare Bk. Coll.

The first catalog (p. 162–167) lists comets from the flood to the birth of Christ, together with the ensuing events, both evil and good, and citations to authorities; the second (p. 167–214) continues the listing into the Christian era. The following possible and confirmed returns of Halley's Comet are included (though the dates vary in some cases from those now accepted):

466 B.C.: p. 162;
87 B.C.: p. 166;
13 B.C.: p. 167;
A.D. 66: p. 168;
A.D. 217: p. 169;
A.D. 375: p. 171;
A.D. 450: p. 173;
A.D. 531: p. 174;
A.D. 684: p. 177;
A.D. 761: p. 177;
A.D. 837: p. 179;
A.D. 910: p. 181;
A.D. 1066: p. 184;
A.D. 1145: p. 187;
A.D. 1222: p. 189;
A.D. 1301: p. 192;
A.D. 1379: p. 196;
A.D. 1456: p. 199;
A.D. 1531: p. 205;
A.D. 1607: p. 211; and
A.D. 1682: p. 214.

3158
Zajdler, Ludwik. Naprzeciw komecie Halleya. Urania (Kraków), r. 51, luty 1980: 48–51. illus. QB1.U7, v. 51

The author supplements this article in the maj 1980 issue, p. 146–147, with a report on Czapiewska's study (see item 690).

3159
Zamacoïs, Miguel. Lettre à la comète. Le Figaro, 56. année, 12 fév. 1910: 1.
N&CPR

3160
Zami͡echanii͡a o Galleevoĭ kometi͡e. *In* Moscow. Universitet. Uchenyi͡a zapiski, g. 2., ch. 7., 1835: 324–326.

A diagram of the comet's path is said to be appended to this issue.

3161
Zanotti Bianco, Ottavio. Notizie della cometa di Halley. Nuova antologia, v. 229, 16. genn. 1910: 352–353. AP37.N8, v. 229

3162
Zanotti Bianco, Ottavio. Il prossimo ritorno della cometa di Halley. Nuova antologia, v. 226, 1. ag. 1909: 463–466. AP37.N8, v. 226

3163
Zappalà, Vincenzo. Il ritorno della cometa di Halley. Orione, v. 1, ott./dic. 1979: 216–219. illus.

3164
Zerull, R. H., *and* R. H. Giese. The significance of photopolarimetric measurements for the exploration of cometary dust. *In* ESO Workshop on the Need for Coordinated Ground-Based Observations of Halley's Comet, *Paris, 1982.* Proceedings. [Garching bei München, European Southern Observatory] 1982. p. 257–260.

References (18): p. 259–260.

The authors propose measures to be taken "to make use of all information hidden in the light scattering properties of P/Halley's dust . . ."

3165
Zhdanov, Aleksandr M. Proshedshii͡a i budushchee poi͡avlenii͡a komety Gallei͡a. *In* Russkoe astronomicheskoe obshchestvo, *St. Petersburg.* Izvi͡estii͡a, vyp. 5, i͡anv./febr. 1896: 27–32. QB1.R9, v. 5

3166
Zi-ka-wei, China. Observatoire. Observations magnétiques des 17-18-19 mai 1910. Lu-kia-pang, (près Chang-hai). *In its* Observations magnétiques faites à l'observatoire de Lu-kia-pang. t. 3; année 1910. Zi-ka-wei, Chang-hai, Impr. de la mission catholique à l'Orphelinat de T'ou-sè-wè, 1915. p. [77]–[78] plate. QC830.Z5, v. 3

The leaf with these observations follows plate 7. The report and its accompanying graphs may have appeared first in mid-1910 as part of a special circular entitled *Passage de la comète de Halley sur le disque du soleil.*

3167
Zigel', Feliks I͡U. Khvostatye zvezdy. [Moskva] Molodai͡a gvardii͡a, 1948. 182 p. illus., ports. QB721.Z54

"Smeloe predskazanie": p. 49–54. On Halley's prediction of the return of the 1682 comet.

"Kometa i t͡svetok": p. 61–[70]. Chiefly on the comet's return in 1758.

"Poslednee vozvrashchenie": p. 133–141. About the comet's 1910 return.

References to Halley's Comet occur elsewhere in the book, which is not indexed.

3168
Zimmer, Harro. Der Halleysche Komet als Modell und seine Erscheinungen. *In his* Astronomie 2000: das neue Weltbild der Astrophysik. [Berlin] Safari bei Ullstein [1979] p. 209, 211–217. illus. QB44.2.Z55

3169
Zimmer, Harro. Eine Sonde auf Tuchfühlung mit einem Kometen: Rendezvous mit Halley. Bild der Wissenschaft, 16. Jahrg., Feb. 1979: 86–89, 92–94, 98, 100. illus. (part col.), port. Q3.B55, v. 16

An abstract in English appears on p. 136, and a list of references, on p. 137, of the same issue.

Includes, in a box on p. 98, an interview with Thomas A. Young, director of NASA's planetary program.

3170

Zimmermann, Johann J. Cometologia; oder, Drey Betrachtungen über die cometen von 1680, 1681 und 1682. Stuttgart, 1682.

Cited in various ways by Zedler (1749), Lalande (1803), Robert Watt (1824), Poggendorff (1863), Mädler (1873), and Thorndike (1958), but not included in Dünnhaupt's *Bibliographisches Handbuch der Barockliteratur* (1981).

3171

Zimmermann, Johann J. Cometo-scopiae pars altera. Fortsetzung Gnädigst anbefohlenen Bedenckens, uber den neulichen Cometen, welcher im Monath Novembri erschienen, und auch wiederumb unter die Sonnen-Strahlen sich verborgen, aber im folgenden Decembri selbigen erstverflossenen 1680. Jahrs, von neuem und mit grösserer Apparenz herfürgegangen. Stuttgart, Zufinden bey J. G. Zubrodt [1681] 105 p.

Held by the Crawford Library of the Royal Observatory Edinburgh under shelfmark CR. C1. 306 (2).

Contains a table listing all comets from 480 B.C. on, together with the events associated with them. Among these are entries for the following apparitions of Halley's Comet:
451: p. 14–15;
684: p. 16–17;
837: p. 18–19;
1066: p. 20–21;
1145: p. 22–23;
1301: p. 24–25;
1456: p. 26–27;
1531: p. 28–29; and
1607: p. 32–33.

3172

Zimmermann, Johann J. Portendens gravia ex aqvilone futura cometes. Das ist: Neuer Comet-Stern, welcher in diesem 1682. Jahr, im Monat Augusto sich anfänglich von Mitternacht her sehen lassen. Kürtzlich und auf einfältigste erörtert. Stuttgart, In Verlegung J. G. Zubrodten, 1682. [23] p. fold. illus.

Held by the British Library under shelfmark 532. e. 43.

Zimmermann's chart, showing the path of the comet among the constellations during the period Aug. 15–Sept. 7, is reproduced in *Das Weltall*, 11. Jahrg., 1. Septemberheft 1911, p. 349 (QB1.W4, v. 11).

3173

Ziołkowski, Krzysztof. Czterdzieści pięć obiegów komety Halleya. Urania (Kraków), r. 53, sierp./wrzes. 1982: 221–228. illus. QB1.U7, v. 53

Front and back covers of the issue reproduce 1910 photographs of the comet.

3174

Zöppritz, August. 1910, das Kometenjahr. Ergänzung zu den Prognosen aus den Gestirnstellungen für 1909. Der Halley'sche Komet, seine Einflüsse und sein Perihelium (grösste Sonnennähe). Prognosen und Prognosen für 1910 Anhang: Die Konsequenzen aus der gewonnenen Erkenntnis. München, Verlag der ärztlichen Rundschau [1910] 36 p.

3175

Zornlin, Rosina M. What is a comet, papa? London, J. Ridgway, 1835. 70 p. CtY

"A *wee booky*, with a familiar description of comets, and particularly of our now hourly looked-for visitor, Mr. Halley; our young friends will be pleased with it."—*London Literary Gazette*, Aug. 8, 1835, p. 506 (AP4.L42, 1835).

3176

Zur Erinnerung an den schönen Monat Mai 1910, wo wir mit unserem lieben Hartmann so angenehme und liebevolle Tage verlebt haben! *In* Konkoly-Thege, Miklós. Beschreibung der vom Anfang des Jahres 1908 bis zum Schluss des Jahres 1911 auf dem Astrophysikalischen Observatorium neu angekauften und häuslich hergestellten Instrumente und Apparate. Budapest, 1912. (Kleinere Veröffentlichungen des Königl. Ungarischen Astrophysikalischen Observatoriums von Konkoly's Stiftung in Ó-Gyalla, 14) front. DN-Ob; NN; ViU

Reproduction of a photograph showing Dr. Johannes Hartmann, director of the Göttingen observatory, and the author, at the 10-inch refractor in Ó-Gyalla when Halley's Comet was nearest the earth.

3177

Zwei Gutachten Georgs von Peuerbach über Kometen (1456 und 1457). *In* Vienna. Institut für österreichische Geschichtsforschung. Mitteilungen. 68. Bd. Graz, H. Böhlaus Nachf., 1960. p. [266]–290. DB1.V66, v. 68

Contents: 1. Überlieferung und Text, von Alphons Lhotsky.—2. Astronomischer Kommentar, von Konradin Ferrari d'Occhieppo.

The more extensive of the two records concerns the 1456 appearance of Halley's Comet.

3178

Zwinger, Theodor. Eygendtliche Abbildung des in dem Augst- und Herbstmonat dieses 1682. Jahres durch gantz Europam gesehenen Cometen. Basel, 1682.

SUPPLEMENT

3179
Akim, É. L., V. V. Savchenko, *and* V. A. Stepan'i͡ant͡s. Teorii͡a dvizhenii͡a komety Gallei͡a. *In* Akademii͡a nauk SSR. Doklady, t. 272, no. 5, 1983: 1091–1096. illus. AS262.S3663, v. 272

References (7): p. 1096.

3180
Anderson, Ian. Europe looks east for help to find Halley's Comet. New scientist, v. 100, Dec. 15, 1983: 792. illus. Q1.N52, v. 100

Data received from the Vega spacecraft will be needed to help the Giotto spacecraft reach its destination.

3181
Avanesov, G. A., *and others*. Specific features of the design and development of the onboard scientific payload for Comet Halley studies (VEGA project). [n.p., 1983?] 7, [3] p. illus. (IAF–83–214)

AIAA accession no. A84–11765.

Presented at the 34th congress of the International Astronautical Federation, Oct. 10–15, 1983, in Budapest.

3182
Bortle, John E., *and* Charles S. Morris. Brighter prospects for Halley's Comet. Sky & telescope, v. 67, Jan. 1984: 9–12. illus. (part col.) QB1.S536, v. 67

In analyzing past apparitions and applying their findings to the coming encounter, the authors conclude that it "will result in two moderately favorable passages by the Earth instead of only one." In their view, "the opportunity to observe Halley *both* before and after perihelion has never been better throughout history."

There is a box with data on first and last naked-eye sightings of the comet at 12 apparitions during the period A.D. 66–1910, a section entitled "Predicting Halley's Brightness," and a "month-by-month description of Halley's behavior as we anticipate it for observers at dark sites." This covers the period Aug. 1985–May 1986.

3182a

Chang, Yü-che. Ha-lei hui hsing chin hsi. [Pei-ching] Chih shih ch'u pan she [1982] 97 p. illus. (part fold.) QB723.H2C43 1982 Orien China

3183

Chronologia dos cometas, que appareceram desde o an. 480. antes do nascimento de N.S. J. Christo, até ao tempo presente: Historia dos successos memoraveis, que se seguiraõ a seus apparecimentos. Mostra-se sua natureza, provandose, que saõ verdadeiros astros, creados no principio de mundo: Convence-se, que naõ saõ infaustos; e que naõ pódem influir nos sublunares. Criticaõ-se algumas opinioens; e se extende a mesma doutrina ao cometa presente. Lisboa, Na Officina de A. V. da Silva, Anno de MDCCLIX. 30 p. Micro 82/5800, reel 57, no. 2543

The chronological listing includes references to appearances of Halley's Comet in 760, 837, 1066, 1301, 1456, 1531, 1607, and 1682.

3184

Cook, Anthony. Comet Halley update #2. Griffith observer, v. 48, Mar. 1984: 9–10. illus. QB1.G7, v. 48

Summarizes observations made during the period Oct. 1982–Feb. 1983.

3185

Dark skies for Comet Halley journal. v. 1+ Feb. 1984+ [Rockford, IL?] illus. quarterly.

Issued with the *Reflector*, newsletter of the Astronomical League.

See the letter entitled "Light Pollution and Halley's Comet" by Fred Schaaf in *Sky & Telescope*, v. 67, Apr. 1984, p. 300 (QB1.S536, v. 67), publicizing the new periodical, of which Schaaf is the editor.

3186

Dudley, Janet. The 1910 return of Halley's Comet: the popular press and the public. *In* British Interplanetary Society. Journal: Halley's Comet, v. 37, Jan. 1984: 45–48. illus. TL790.A1B7, v. 37

Quotes from newspaper reports and from letters received at the Royal Greenwich Observatory, where the author serves as librarian and archivist. Heath Robinson's cartoon, "Searching for Halley's Comet, at Greenwich Observatory," is reproduced.

3187

Fehrenbach, Charles. Les comètes. La comète de Halley. *In* Académie des sciences, *Paris*. Comptes rendus des séances: vie académique, t. 296, avril 1983: xvii–xxiv. illus. (Exposés sur les planètes, 3) Q2.A26, suppl., v. 296

Presented at the meeting of Jan. 17, 1983.

3188

Five comet missions. Space world, v. U-3-243, Mar. 1984: 35. illus.

Summary data on Giotto, Planet-A, the two Vega spacecraft, and the ISEE-3, now redesignated ICE (International Comet Explorer), which is expected to pass through the tail of Comet Giacobini-Zinner on Sept. 11, 1985, and will also be in a position to make some observations of Halley's Comet in early 1986.

3189

Giotto under test. Spaceflight, v. 26, Apr. 1984: 154. illus.
TL787.B725, v. 26

Reports completion during January of electrical and electromagnetic interference tests of the spacecraft at British Aerospace in Bristol. The cover of the issue reproduces an artist's impression of the spacecraft approaching the nucleus of Halley's Comet.

3190

Godden, William. Cometary orbits—the longitude of perihelion, Jupiter, and Halley's Comet. English mechanic and world of science, v. 77, July 24, 1903: 522.
T1.E5, v. 77

3191

Halley studies from the shuttle. Astronomy, v. 12, Feb. 1984: 60. col. illus.
QB1.A7998, v. 12

Details on the "Astro" payload being developed by NASA for use on three shuttle flights. Since the first of these is scheduled for March 1986, modifications are planned to permit a variety of observations of Halley's Comet. See also the paragraph headed "Astro" in the Apr. 1984 issue, p. 66–67.

3192

Halley's Comet mission study planned. Aviation week & space technology, v. 105, Dec. 13, 1976: 28.
TL501.A8, v. 105

NASA is forming a science advisory group "to determine science payoffs and technology requirements for launching an unmanned spacecraft on a rendezvous mission with Halley's comet . . ."

3193

[Halley's Comet photographic postcard] *In* Morgan, Hal, *and* Andreas Brown. Prairie fires and paper moons: the American photographic postcard: 1900–1920. Foreword by John Baskin. Boston, D. R. Godine [1981] p. 17.
E168.M838

Made at the Hippodrome Studio in Pittsburgh. A man sits astride a large cutout marked "Halley's Comet," beneath which are seen factory chimneys and office buildings of varying height, one surmounted by an American flag. The backdrop shows a full moon partially obscured by a layer of fleecy clouds.

3194

Hirao, Kunio, *and* Hiroki Matsuo. Japanese Halley exploration project. *In* International Astronautical Congress, *33d, Paris, 1982*. Space 2000. Selection of papers presented at the 33rd Congress of the International Astronautical Federation, September 27–October 2, 1982, Paris, France. Edited

by Luigi G. Napolitano. New York, American Institute of Aeronautics and Astronautics [1983] p. 373–384. illus. (IAF paper 82–191)
TL787.I465 1982

Reference (1): p. 384.

Details on the MS-T5 and Planet-A spacecraft and their missions.

3195

Hughes, David W. Comet Halley—its history and future. *In* British Interplanetary Society. Journal: Halley's Comet, v. 37, Jan. 1984: 3–16. illus., facsims. TL790.A1B7, v. 37

References (30): p. 16.

3196

Hughes, David W. Edmond Halley: why was he interested in comets? *In* British Interplanetary Society. Journal: Halley's Comet, v. 37, Jan. 1984: 32–44. illus., facsims., port. TL790.A1B7, v. 37

References (30): p. 44.

3197

Igenbergs, E., H. Kuczera, *and* U. Weishaupt. Results of impact simulation for the GIOTTO mission. Acta astronautica, v. 10, Dec. 1983: 793–803. illus. TL787.A27, v. 10

References (7): p. 803.

Reports first results of laboratory tests undertaken to develop and calibrate cometary dust experiments to be carried out by the Dust Impact Detection System and the Particulate Impact Analyzer.

3198

International Halley Watch updates— Astronomy, v. 12, Mar. 1984: 62.
QB1.A7998, v. 12

News items discussing (1) the correct pronunciation of "Halley" and (2) IHW plans to test observing techniques on comet P/Crommelin during the last week of March, when it is expected to be at its brightest.

3199

Jenkins, R. M., *and* D. C. R. Link. Giotto: Europe's exploratory mission to the Comet Halley. *In* British Interplanetary Society. Journal: Halley's Comet, v. 37, Jan. 1984: 17–27. illus. TL790.A1B7, v. 37

References (4): p. 27.

The authors directed work on the spacecraft at British Aerospace.

3200

Laufer, Joseph M. Comet Halley stamp. Sky & telescope, v. 67, Apr. 1984: 300. QB1.S536, v. 67

Letter to the editor calling attention to a campaign for a Christmas stamp in 1985 featuring Giotto's "Adoration of the Magi," in which the star of Bethlehem is shown as a comet, possibly a portrait of the 1301 apparition of Halley's Comet.

3201

LeVesconte, Amy. [Recollections of Halley's Comet in 1910] McDonald Observatory news, v. 12, Jan. 1984: 7.

Recounts in a letter to the editor her memories of the comet, which she saw at the age of 12 in a rural area of Minnesota.

3202
Lindemann, Adolph F., *and* Frederick A. Lindemann. A preliminary paper on some quantitative applications of radiation pressure to cosmic problems. *In* Royal Astronomical Society. Monthly notices, v. 71, Dec. 1910: 156–161. QB1.R7, v. 71

The authors derive an estimate of the mass of Halley's Comet at the time of its 1909 recovery as 2.03×10^{14} g. According to Bobrovnikoff, this "is based on many questionable assumptions and is probably much too small."

3203
Lizunkova, I. S., *and* E. A. Kaĭmakov. Ozhidaemyĭ khod integral'noĭ svetimosti komety Galleĭ. *In* Kiev. Universytet. *Astronomichna observatorii͡a.* Kometnyĭ t͡sirkuli͡ar, no. 314, 25 okt. 1983: 4. DN-Ob

3204
Lorenzini, Secondo. Gli ultimi giorni di un pianeta. Novella fantastica. Nuova antologia, 5. ser., v. 147, 16 magg. 1910: 292–300. AP37.N8, s. 5, v. 147

Martians learn that Halley's Comet has destroyed the inhabitants of Venus, not those of the earth.

3205
McIntosh, B. A., *and* Anton Hajduk. Comet Halley meteor stream: a new model. *In* Royal Astronmical Society. Monthly notices, v. 205, Dec. 1983: 931–943. illus.

References (23): p. 943.

A shell model explains structural features not accounted for in the previous toroidal model.

3206
Mateu Sancho, Pedro. El cometa Halley. *In his* La luna, próximo objetivo astronáutico. Barcelona, Plaza & Janés [1964] (Biblioteca de ampliación cultural) p. 182–184. QB581.M33

On the "end of the world" panic of May 1910.

3207
Meyer, William F. Halley's Comet. Salesman, May 1910: 8–10. HF5438.A35, 1910

3208
Michielson, H. F. Probing Halley's Comet. Astronautics & aeronautics, v. 6, Oct. 1968: 20. illus. TL501.A688A25, v. 6

3209
Modern observational techniques for comets. Proceedings of a workshop held at Goddard Space Flight Center, Greenbelt, Maryland, on October 22–24, 1980. [Editors: J. C. Brandt, B. Donn, J. M. Greenberg, J. Rahe] Pasadena, Calif., National Aeronautics and Space Administration, Jet

Propulsion Laboratory, California Institute of Technology, 1981. 319 p. illus. (part col.) (JPL publication 81-68) DN-Ob

Includes bibliographic references.

Seven of the 45 constituent papers are separately listed in this bibliography; several of the others briefly touch on preparations for observing Halley's Comet during the 1986 return.

3210

Montucla, Jean E. Des comètes. *In his* Histoire des mathématiques. Nouv. éd., considérablement augm., et prolongée jusque vers l'époque actuelle. t. 4. Achevé et publié par Jérôme de La Lande. A Paris, Chez H. Agasse, An X. (mai 1802) p. 250-261. QA21.M8, v. 4 Rare Bk. Coll.

Most of the chapter is devoted to the story of Halley's researches, the calculations of Clairaut, Lalande, and Mme. Lepaute, and the return in 1759 of the comet of 1682.

3211

NASA considers use of Galileo spacecraft for Halley's mission. Aerospace daily, v. 110, Aug. 28, 1981: 333. HD9711.5.U58A33, v. 110

Includes discussion of the Halley intercept mission (HIM) and the Halley's earth return (HER), a sample return mission.

3212

Newburn, Ray L., *and* Jürgen Rahe. The International Halley Watch. *In* British Interplanetary Society. Journal: Halley's Comet, v. 37, Jan. 1984: 28-31. TL790.A1B7, v. 37

References (6): p. 31.

3213

Nichols, Robert G. NASA's Comet Halley encounters. Astronomy, v. 12, Feb. 1984: 60. QB1.A7998, v. 12

On plans to observe Halley's Comet with the rerouted ISEE-3 satellite and the Pioneer Venus orbiter.

See also the article by Robert W. Farquhar, "ISEE-3: a Late Entry in the Great Comet Chase," in *Astronautics & Aeronautics*, v. 21, Sept. 1983, p. 50-55 (TL501.A688A25, v. 21).

3214

Niedner, Malcolm B., John C. Brandt, Jürgen Rahe, *and* Daniel A. Klinglesmith. Wide-field observations of Halley's Comet in 1985-1986. *In* American Astronomical Society. Bulletin, v. 15, no. 4, 1983: 960. QB1.A255, v. 15

Abstract of a paper presented at the 163d meeting of the Society, Jan. 8-11, 1984, at Las Vegas, Nevada.

Reports the activities of the International Halley Watch team concerned with organizing observations of large-scale phenomena.

3215

Niedrauer, Jill. Comprehensive campaign launched to promote investigation of Halley's Comet. Delta Vee update, v. 1, autumn 1982: 12, 14.

Outlines five phases planned for the "Halley Campaign," the most ambitious of which is the promotion of a privately funded U.S. spacecraft mission, to be named the Halley Observation Mission.

See also "The Halley Observation Mission," extracted from a progress report by Ron Maehl, on p. 13 of the same issue.

3216

Notes sur la comète de Halley. *In* Port-au-Prince, Haiti. Séminaire collège St. Martial. Observatoire météorologique. Bulletin semestriel, jan./juin 1910: 55–57. QC987.H4P4, 1910

Observations were made Jan. 2–June 21.

3217

Ottewell, Guy. Halley's Comet. *In his* Astronomical calendar. 1984. [Greenville, S.C., Dept. of Physics, Furman University, 1983] p. 57–59. illus.

Includes orbit diagrams for 1910 and 1986 and a path diagram for 1986.

3218

Proctor, Mary. Wheeling through the tail of a comet. New York herald, Nov. 21, 1909, magazine section: 6. illus., ports. N&CPR

"Halley's wanderer of the skies is approaching the earth, which in May next will pass through its train and likely be swept by star dust."

3219

Robinson, William Heath. Searching for Halley's Comet, at Greenwich Observatory. Sketch, v. 68, Nov. 17, 1909: 175. illus. (*His* Science jottings, 1) AP4.S6, v. 68

Cartoon showing the astronomers employing a number of improbable methods to augment the telescope's power.

3220

Runavot, Josette, *and* Arlène Ammar. The French participation in the VEGA project. [n.p., 1983?] 4, [2] p. illus. (IAF–83–215)

AIAA accession no. A84–11766.

Presented at the 34th congress of the International Astronautical Federation, Oct. 10–15, 1983, in Budapest.

3221

Sagdeev, Roal'd Z. Před vzletem k Halleyově kometě. Vesmír, roč. 62, čís. 11, 1983: 343–344. Q4.V44, v. 62

An interview, signed I. B.

3222

Schaaf, Fred. [Dark skies for Comet Halley] McDonald Observatory news, v. 12, Jan. 1984: 7.

Letter to the editor pointing out that public interest in the comet could be used by astronomers to call attention to the increasingly serious problem of light pollution.

3223

Simonenko, Alla N. Kometa Galleı͡a obnaruzhena. Priroda, mart. 1983: 107. QB1.Z47, 1983

3224
Steinke, Violette. Delving into Royal Delft. Plate collector, v. 11, Mar. 1, 1983: 72, 79. illus. NK4895.P55P57, v. 11

The picture shows a 10-inch commemorative plate entitled "Het Kometen Jaar," featuring two comets, designated "1910A" and "Halley."

3225
Taton, René. Clairaut et le retour de la comète de Halley. *In* Arithmos—Arrythmos; Skizzen aus der Wissenschaftsgeschichte. Festschrift für Joachim Otto Fleckenstein zum 65. Geburtstag, hrsg. von Karin Figala [und] Ernst H. Berninger. München, Minerva Publikation [1979] (Wissenschaftsgeschichte) p. 253–274. Q171.A67

Bibliographic references included in "Notes" (p. 267–274).

Includes the texts of two previously unpublished letters from Clairaut, to Gael Morris (Nov. 16, 1757) and Daniel Bernoulli (Apr. 10, 1759).

3226
Tatum, Jeremy B., *and* E. C. Campbell. The cyanogen bands of Comet Halley. *In* Royal Astronomical Society of Canada. Journal, v. 77, Oct. 1983: 257. QB1.R485, v. 77

Abstract of a paper presented at the 14th meeting of the Canadian Astronomical Society, June 26–30, 1983, in Victoria, B.C.

3227
Valníček, Boris. Setkání s kometou—projekt Vega. Vesmír, roč. 62, čís. 6, 1983: 185. Q4.V44, v. 62

3228
Vienna. Universität. *Sternwarte.* Planeten- und Kometen-Beobachtungen am Grubb'schen Refraktor von 67^{cm} Öffnung in den Jahren 1907 bis 1910. [Hrsg. vom Direktor J. v. Hepperger. Wien, J. N. Vernay, 1919] 380 p. (*Its* Annalen, 23. Bd., Nr. 2) QB4.V67, v. 23

"Komet 1910 II. (Halley)": p. 243–245.

A section listing observations made with the Clark refractor (30.1 cm aperture) during the years 1906–10 includes data for Halley's Comet on p. 299–303.

A final section on results of the observations gives positions for Halley's Comet for 28 observations made Dec. 6, 1909–June 12, 1910, on p. 346.

3229
Walgate, Robert. Europe's hopes for second probe. Nature, v. 307, Jan. 26, 1984: 308. illus. Q1.N2, v. 307

Presents arguments in favor of a second Giotto mission, now being considered by ESA. Mention is also made of a rumor that Prime Minister Thatcher inquired about the possibility that the comet could be destroyed if the spacecraft strikes the nucleus; calculations indicate that little damage to the comet would result from such a collision.

3230
Whitelow, Edward T. Halley's Comet. *In* Southport Scientific Society, *Southport, Eng.* Report. 15th; 1910/11. p. 5–23. illus., plate. Q41.S75, v. 15

3231

Die Wiederentdeckung des Halleyschen Kometen. Astronomie und Raumfahrt, 21. Jahrg., Heft 5, 1983: 149. QB1.A55, v. 21

Translation by K. Tzschachmann of a report dated Oct. 20, 1982, and attributed to the Caltech News Bureau.

3232

Will Halley's Comet strike the earth? What will happen? New York herald, Nov. 14, 1909, 3d section: 3. illus., ports. N&CPR

Eight noted American astronomers—William Beebe, David Todd, E. B. Frost, H. A. Jacoby, Percival Lowell, F. R. Moulton, W. H. Pickering, and H. N. Russell—whose views were solicited by the *Herald* agreed that the comet would not strike the earth and that passage through the tail would scarcely be noticeable.

3233

Wurm, Karl, *and* Augusto Mammano. The motion of dust and gas in the heads of comets with type II tails. Astrophysics and space science, v. 18, Oct. 1972: 491–503. illus. QB460.A876, v. 18

References (13): p. 503.

Studying photographs of Comet Bennett, the authors find that dust particles, which eventually form the dust tail, appear to leave the nucleus "only within a certain cone," the aperture of which is directed toward the sun. This cone, identical to the "Ausströmungskegel" observed by Bessel during the 1835 apparition of Halley's Comet, is also the area from which the ions that form the plasma (type I) tail are expelled. "Comet Bennett is compared with Comet Halley 1910; they are related in many respects although Comet Halley had a lower dust production rate than the Comet Bennett." The authors believe that the expelled dust particles are electrically charged.

3234

Yeomans, Donald K. Comet Halley, 1984. Geocentric positions for 0^h TDT. *In* The Astronomical almanac for the year 1984. Washington, U.S. Govt. Print. Off. [1983] p. G13. QB8.U6A77 1984

Right ascension, declination, distance in AU, and magnitude are given at 5-day intervals for the period Jan. −4 to Dec. 31.

3235

Ziołkowski, Krzysztof. Międzynarodowy program badań komety Halleya. Urania (Kraków), r. 54, wrzes. 1983: 223–227. illus. QB1.U7, v. 54

On the International Halley Watch.

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